APPENDIX F
DIRECT AND INDIRECT IMPACTS: ASSESSMENT METHODOLOGY

This appendix briefly describes the methods used to assess the potential direct and indirect effects of the alternatives in this *Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*. Included in this appendix are discussions of general impact assessment methodologies for land resources, infrastructure, noise and vibration, air quality, geology and soils, water resources, ecological resources, cultural resources, public and occupational health and safety, transportation, socioeconomics, waste management, and environmental justice. Each section includes a description of the affected resources, region of influence, and impact assessment method. Detailed descriptions of the methods for evaluating impacts on air quality, groundwater, ecological risk, and cumulative impacts are presented in Appendices G, O, P, and R, respectively. Descriptions of the methods for evaluating the human health effects related to (1) intra- and intersite transportation, (2) environmental justice concerns, and (3) normal operations and facility accidents are presented in Appendices H, J, and K, respectively.

Methods for assessing environmental impacts vary for each resource area. As presented in *Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC & WM EIS)*, Appendix G, "Air Quality Analysis," for example, pollutant emissions from tank waste retrieval, treatment, and disposal and tank closure activities were evaluated to determine their effect on ambient concentrations and their compliance with ambient air quality standards. Comparison with regulatory standards is a commonly used method for benchmarking environmental impacts, and appropriate comparisons were made in a number of resource analyses to provide perspective on the magnitude of identified impacts. For waste management, waste generation rates were compared with the capacities or expected capacities of waste management facilities. Impacts in all resource areas were estimated using a consistent set of input variables and computations. The impacts at Idaho National Laboratory (INL) resulting from the two options under the FFTF Decommissioning alternatives are addressed in the affected resource areas. Moreover, efforts were made to ensure that calculations in all areas used accepted protocols and up-to-date models.

F.1 LAND RESOURCES

F.1.1 Land Use

F.1.1.1 Description of Affected Resources

Land use is defined as the way land is developed and used in terms of the kinds of anthropogenic activities that occur (such as agriculture and residential and industrial areas) (EPA 2006). Analysis of land use includes the land on and adjacent to the Hanford Site (Hanford) and INL, the physical features that influence current or proposed uses, pertinent land use plans and regulations, and land ownership and availability. The region of influence (ROI) for land use impact assessment encompasses Hanford, including the 200 Areas, 400 Area, and Borrow Area C, as well as areas immediately surrounding the site.

F.1.1.2 Description of Impact Assessment

The amount of land disturbed and the conformity of disturbance with existing land use designations were considered in evaluating potential impacts (see Table F–1). The analysis focused on the net land area affected, its relationship to conforming and nonconforming land uses, current land use designations, and other factors pertaining to land use. Total land area requirements considered include those areas to be occupied by the required footprint of new facilities in conjunction with any additional parking, construction laydown areas, or supporting roadways. Land use assessment methodology and analysis are discussed further in Chapter 3, Section 3.2.1.1.

Table F–1. Land Use and Visual Resource Impact Assessment Protocol

Resource	Required Data		Measure of Impact
	Affected Environment	**Alternative**	
Land use	Acreage of affected areas	Facility acreage requirements	Area converted to project use
	Existing land use designations	Location of facilities on the site; expected modifications of site activities and uses to accommodate the alternatives	Incompatibility with existing or future land use
Visual resources	Current appearance of 200 Areas, 400 Area, Borrow Area C, and Idaho National Laboratory's Materials and Fuels Complex and Idaho Nuclear Technology and Engineering Center, as well as current visual resource management classification	Location of facilities on the site; facility dimensions and appearance	Changes in appearance of 200 Areas, 400 Area, Borrow Area C, and Idaho National Laboratory's Materials and Fuels Complex and Idaho Nuclear Technology and Engineering Center, as well as current visual resource management classification

F.1.2 Visual Resources

F.1.2.1 Description of Affected Resources

Visual resources are the natural and manmade features that give a particular landscape its character and aesthetic quality. Landscape character is determined by the visual elements of form, line, color, and texture. All four elements are present in every landscape; however, they exert varying degrees of influence. The stronger the influence exerted by these elements in a landscape, the more interesting the landscape. The ROI for visual resources includes the geographic area from which activities associated with the various alternatives may be seen by members of the public. This would generally include nearby higher elevations and public roadways.

F.1.2.2 Description of Impact Assessment

Visual resource assessments are based on a description of the viewshed and the U.S. Bureau of Land Management's visual resource management classification (BLM 1986). A qualitative visual resource analysis was conducted to determine whether disturbances associated with project activities would alter the visual environment. Classifications of visual contrast settings are provided in Table F–2. Classifications were derived from an inventory of scenic qualities, sensitivity levels, and distance zones for particular areas. For example, the classification of the 200-West Area from State Route 240 is Class IV.

Table F–2. U.S. Bureau of Land Management Visual Resource Classifications

Classification	Visual Settings
Class I	Very limited management activity; natural ecological change.
Class II	Management activities related to solitary small buildings and dirt roads may be seen, but should not attract the attention of the casual observer.
Class III	Management activities may attract attention, but should not dominate the view of the casual observer; the natural landscape still dominates buildings, utility lines, and secondary roads.
Class IV	Management activities related to clusters of two-story buildings, large industrial/office complexes, and primary roads, as well as limited clearcutting for utility lines or ground disturbances, may dominate the view and be the major focus of viewer attention.

Source: BLM 1986:6, 7.

The visual resource analysis focused on the degree of contrast between the proposed actions and the surrounding landscape, the location and sensitivity levels of public vantage points, and the visibility of the proposed actions from the vantage points. The distance from a vantage point to the affected area was also considered, as distance can diminish the degree of contrast and visibility. A qualitative assessment of the degree of contrast between proposed facility construction and operations and the existing visual landscape is presented, as applicable.

Thus, to determine the range of the potential visual effects of new facilities, the analysis considered the potential impacts of construction and operations in light of the aesthetic quality of surrounding areas, as well as the visibility of proposed activities and facilities from public vantage points. The visual resource assessment methodology and analysis are discussed further in Chapter 3, Section 3.2.1.2.

F.2 INFRASTRUCTURE

F.2.1 Description of Affected Resources

Site infrastructure includes the physical resources that compose the ground transportation and utility systems required to support the construction, operations, and deactivation of facilities associated with the various alternatives and options under consideration in this *TC & WM EIS*. It also includes the capacities of the (1) onsite road networks; (2) electric power transmission and distribution system; (3) natural gas and liquid fuel (i.e., fuel oil, diesel fuel, and gasoline) storage and conveyance systems; and (4) water supply system.

The ROI is generally limited to the boundaries of the site. However, should infrastructure requirements exceed site capacities, the ROI would be expanded (for analysis) to include the sources of additional supply. For example, if electrical demand (with added facilities) exceeded site availability, then the ROI would be expanded to include the likely source of additional power (i.e., the electric power pool currently supplying the site).

F.2.2 Description of Impact Assessment

In general, utility infrastructure impacts were assessed by evaluating the requirements of each alternative, including associated activities and facility demands, against site capacities. Impacts were assessed for each utility infrastructure resource (electricity, fuel, and water) for the various alternatives (see Table F–3). Tables reflecting site availability and infrastructure requirements were developed for each alternative. Data for these tables were obtained from documentation[1] describing the existing

1 For applicable source data, see the documentation referenced in Chapter 3, Sections 3.2.2 and 3.3.2, of this *TC & WM EIS*.

infrastructure at the facility site locations and from data reports prepared to support this environmental impact statement (EIS) in regard to proposed tank closure, Fast Flux Test Facility decommissioning, and waste management activities (SAIC 2010a, 2010b, 2010c).

Table F–3. Infrastructure Impact Assessment Protocol

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Electricity (energy consumption)	Site/facility area capacity and current usage	Activity and facility requirements	Additional requirement (with added facilities) exceeding facility area/site capacity
Fuel (natural gas, gasoline, diesel fuel[a])			
Water			

[a] Includes No. 2 diesel fuel (road diesel) and heating fuel oil.

Any projected demand for infrastructure resources exceeding site availability can be regarded as an indicator of impact. Whenever projected demand approaches or exceeds capacity, further analysis of that resource is warranted. Often, design changes can mitigate the impact of additional demand for a given resource. For example, substituting fuel oil for natural gas (or vice versa) for heating or industrial processes can be accomplished at little cost during the design of a facility, provided the potential for impact is identified early. Similarly, a dramatic "spike" in peak demand for electricity can sometimes be mitigated by changes to operational procedures or parameters.

Although ground transportation infrastructure is part of the physical infrastructure, incremental demands (e.g., new roadways to support project activities) were not separately quantified, but were assessed as part of the land use impacts analysis (see Section F.1.1.2). Note that the methodology for assessing local roadway traffic impacts, which are related to projected changes in facility site employment and local population, is described in Section F.11.2. The infrastructure assessment methodology and analysis are discussed further in Chapter 3, Section 3.2.2.

F.3 NOISE AND VIBRATION

F.3.1 Description of Affected Resources

Noise, or sound, results from the compression and expansion of air or some other medium when an impulse is transmitted through it. Sound requires a source of energy and a medium for transmitting the sound wave. Propagation of sound is affected by various factors, including meteorology, topography, and barriers. Noise is undesirable sound that interferes or interacts negatively with the human or natural environment. Noise may disrupt normal activities (e.g., hearing, sleep), damage hearing, or diminish the quality of the environment.

Noise-level measurements used to evaluate the effects of nonimpulsive sound on humans are adjusted using an A-weighting scale that accounts for the hearing response characteristics (i.e., frequency) of the human ear. Noise levels are expressed in decibels (dB) or, in the case of A-weighted measurements, decibels A-weighted (dBA). The U.S. Environmental Protection Agency (EPA) has developed noise-level guidelines for different land use classifications (EPA 1974). The EPA guidelines identify a 24-hour average exposure level (energy-equivalent sound level) of no more than 70 dBA of intermittent environmental noise to prevent hearing loss. Likewise, day-night average levels of 55 dBA outdoors and 45 dBA indoors are identified as the limits to prevent activity interference and annoyance. The State of Washington has adopted noise-level standards for combinations of source classifications and receiving property classifications. The Washington State standard maximum noise-level limit is 60 dBA for industrial areas impacting a residential area and 50 dBA at night (WAC 173-60). Except for prohibition of nuisance noise, neither the State of Idaho nor local governments have established regulations that specify acceptable community noise levels applicable to INL.

Noise from facility construction or operations and associated traffic could affect human and animal populations. The ROI at Hanford includes the 200 Areas; 400 Area; borrow areas; and surrounding areas, including transportation corridors, where proposed activities might increase noise levels. At INL, the ROI includes the Materials and Fuels Complex, Idaho Nuclear Technology and Engineering Center, and surrounding areas, including transportation corridors, where proposed activities might increase noise levels. Transportation corridors most likely to experience increased noise levels are those roads within a few miles of the site boundary that carry most of the site's employee and shipping traffic.

Noise-level data representative of site environs were obtained from existing reports (see Chapter 3, Sections 3.2.3 and 3.3.3). The acoustic environment was further described in terms of existing noise sources for the proposed locations and traffic noise levels along access routes.

F.3.2 Description of Impact Assessment

Noise impacts associated with the alternatives may result from construction, operations, deactivation, decontamination, and closure activities, including increased traffic (see Table F–4). Impacts of proposed activities under each alternative were assessed according to the types of noise sources and the facility site locations relative to the site boundary and noise-sensitive receptors. Potential traffic noise impacts were assessed based on the likely increase in traffic volume. The increases in employee and truck traffic, as reported in the discussion of local traffic (see Chapter 4, Sections 4.1.9, 4.2.9, and 4.3.9), were compared with the existing average traffic volume (see Chapter 3, Sections 3.2.9.4 and 3.3.9.4). For the purpose of comparison between the alternatives, the increase in traffic noise level in dBA can be estimated as 10 times the log of the ratio of the projected traffic volume to the existing traffic volume. Possible impacts on wildlife were evaluated based on the possibility of sudden loud noises occurring during site activities under each alternative.

Table F–4. Noise and Vibration Impact Assessment Protocol

	Required Data		
Resource	**Affected Environment**	**Alternative**	**Measure of Impact**
Noise and vibration	Identification of sensitive offsite receptors (e.g., nearby residences, nearby threatened and endangered wildlife habitat); description of noise levels and noise and vibration sources in the site vicinity	Description of noise and vibration sources; shipment and workforce traffic estimates	Increase in day-night average sound level at sensitive receptors

F.4 AIR QUALITY

F.4.1 Description of Affected Resources

Air pollution refers to the direct or indirect introduction of any substance into the air that could have one or more of the following effects:

- Endanger human health
- Harm living resources and ecosystems
- Damage material property
- Impair or interfere with the comfortable enjoyment of life and other legitimate uses of the environment

For the purpose of this *TC & WM EIS*, only outdoor air pollutants were addressed. These may be in the form of solid particles, liquid droplets, gases, or a combination of these forms. Generally, they can be categorized as primary pollutants (those emitted directly from identifiable sources) and secondary pollutants (those produced in the air by interaction between two or more primary pollutants or by reaction with normal atmospheric constituents that may be influenced by sunlight). Air pollutants are transported, dispersed, or concentrated by meteorological and topographical conditions. Thus, air quality is affected by air pollutant emission characteristics, meteorology, and topography.

Ambient air quality in a given location can be described by comparing the concentrations of various pollutants in the atmosphere with the appropriate standards. The ambient air quality standards established by Federal and state agencies allow an adequate margin of safety for the protection of public health and welfare from the adverse effects of pollutants in the ambient air. Pollutant concentrations higher than the corresponding standards are considered unhealthy; those below such standards are considered acceptable.

Pollutants of concern are primarily those for which Federal and state ambient air quality standards have been established, including criteria air pollutants, hazardous air pollutants, and other toxic air compounds. Criteria air pollutants are listed in the "National Primary and Secondary Ambient Air Quality Standards" (40 CFR 50). Hazardous air pollutants and other toxic compounds are those listed in Title I of the Clean Air Act, as amended (42 U.S.C. 7401 et seq.); those regulated by the "National Emission Standards for Hazardous Air Pollutants" (40 CFR 61); and those that have been proposed or adopted for regulation by the applicable state or are listed in state guidelines. States may set ambient standards that are more stringent than the National Ambient Air Quality Standards (NAAQS) (40 CFR 50). The more stringent of the Federal or state standards are used in this EIS.

Areas with air quality better than the NAAQS for criteria air pollutants are designated as "attainment," while areas with air quality worse than the NAAQS for such pollutants are designated as "nonattainment." Areas may be designated as "unclassified" when sufficient data for attainment-status designation are lacking. Attainment-status designations are assigned by county, metropolitan statistical area, consolidated metropolitan statistical area, or portions thereof, or by air quality control regions. Air quality control regions designated by EPA are listed in "Designation of Areas for Air Quality Planning Purposes" (40 CFR 81). The areas within Hanford and the surrounding counties are designated as attainment (40 CFR 81.348), as are the areas within INL and the surrounding counties (40 CFR 81.313).

For locations within an attainment area for criteria air pollutants, Prevention of Significant Deterioration regulations limit pollutant emissions from new or modified sources and establish allowable increments of pollutant concentrations. Three Prevention of Significant Deterioration classifications are specified, using the criteria established in the Clean Air Act. Class I areas include national wilderness areas; memorial parks larger than 2,020 hectares (5,000 acres); national parks larger than 2,430 hectares (6,000 acres); and areas that have been redesignated as Class I. Class II areas include all areas not designated as Class I. No Class III areas have been designated (42 U.S.C. 7472 et seq.). The Class I area nearest to Hanford is about 145 kilometers (90 miles) to the west (see Chapter 3, Section 3.2.4.1, of this EIS). The Class I area nearest to INL is about 53 kilometers (33 miles) to the west-southwest (see Chapter 3, Section 3.3.4.1.2).

The ROI for air quality encompasses an area surrounding a site that is potentially affected by air pollutant emissions caused by implementation of the alternatives. The air quality impact area normally evaluated is the area in which concentrations of criteria pollutants would increase more than a significant amount in a Class II area (based on the averaging period and pollutant: 1 microgram per cubic meter for the annual average for sulfur dioxide, nitrogen dioxide, and PM_{10} [particulate matter with an aerodynamic diameter less than or equal to 10 micrometers]; 5 micrograms per cubic meter for the 24-hour average for sulfur dioxide and PM_{10}; 500 micrograms per cubic meter for the 8-hour average for carbon monoxide; 25 micrograms per cubic meter for the 3-hour average for sulfur dioxide; and 2,000 micrograms per cubic meter for the 1-hour average for carbon monoxide (40 CFR 51.165). Generally, this ROI covers a few kilometers downwind from the source. Further, for sources within 100 kilometers (60 miles) of a Class I area, the air quality impact area evaluated would include the Class I area if the increase in concentration of any air pollutants for which there are Prevention of Significant Deterioration increments were greater than 1 microgram per cubic meter (24-hour average). The area of the ROI depends on emission source characteristics, pollutant types, emission rates, and meteorological and topographical conditions. For analysis purposes, impacts at Hanford were evaluated at the Hanford Reach boundary and within Hanford along State Route 240, to which the public has access for averaging periods of 1 to 24 hours; at the Hanford boundary for annual averaging periods; and at an additional area 10 kilometers (6 miles) beyond these boundaries in which maximum contributions to pollutant concentrations are expected to be identified.

Impacts at INL were evaluated at the boundary and at roads within INL to which the public has access.

Baseline air quality is typically described in terms of pollutant concentrations modeled for existing sources at each site and background air pollutant concentrations measured near each site. For this analysis, emission data from existing sources at Hanford were obtained from the *Calendar Year 2005 Nonradioactive Inventory of Airborne Emissions Report* (Johnson 2006); concentrations from these data were modeled using the EPA-recommended AERMOD [American Meteorological Society/ U.S. Environmental Protection Agency Regulatory Model] dispersion model (EPA 2004, 2009). Emissions data for INL were obtained from an emission inventory database for 2006 (Depperschmidt 2007).

F.4.2 Description of Impact Assessment

Potential air quality impacts of pollutant emissions from construction, normal operations, deactivation, decommissioning, and closure activities were evaluated for each alternative, as appropriate. This assessment included a comparison of pollutant concentrations under each alternative with applicable Federal and state ambient air quality standards (see Table F–5). If both Federal and state standards exist for a given pollutant and averaging period, compliance was evaluated using the more stringent standard. Operational air pollutant emissions data for each alternative were based on engineering analyses that resulted in values of emissions that would overestimate actual emissions.

Table F–5. Air Quality Impact Assessment Protocol

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Criteria air pollutants and other regulated pollutants[a]	Measured and modeled ambient concentrations (micrograms per cubic meter) from existing sources at the site.	Emission rate (kilograms per year) of air pollutants from facility; source characteristics (stack location, height and diameter, exit temperature and velocity).	Alternative and total site concentrations of each pollutant at or beyond the site boundary or within the boundary on a public road compared with the applicable standard.
Toxic and hazardous air pollutants[b]			Alternative concentration of each pollutant at or beyond the site boundary or within the boundary on a public road compared with the acceptable source impact level. The concentration for the nearby noninvolved member was used to calculate Hazard Quotient or cancer risk.

[a] Carbon monoxide; hydrogen fluoride; lead; nitrogen oxides; ozone; particulate matter with an aerodynamic diameter less than or equal to *n* micrometers; sulfur dioxide; total suspended particulates, and volatile organic compounds.
[b] "Hazardous Air Pollutants" (Clean Air Act, Section 112) are those regulated by the National Emission Standards for Hazardous Air Pollutants and by state regulations.

For each alternative, as appropriate, contributions to offsite air pollutant concentrations were modeled on the basis of guidance presented in EPA's "Guideline on Air Quality Models" (40 CFR 51, Appendix W). The EPA-recommended model AERMOD (EPA 2004, 2009) was selected as an appropriate model to use for air dispersion modeling for Hanford because it is designed to support the EPA regulatory modeling program and predicts conservative impacts. For construction activities at INL, the EPA SCREEN 3 dispersion model (EPA 1995) was used to estimate contributions to offsite air pollutant concentrations.

The modeling analysis incorporated conservative assumptions that generally overestimate pollutant concentrations. The maximum modeled concentration and averaging time for each pollutant were selected for comparison with the applicable standard. The concentrations evaluated were the maximum occurring at or beyond the site boundary and at a public access road or other publicly accessible area within the site. Concentrations of the criteria and toxic air pollutants were presented for each alternative. Five years of representative hourly meteorological data were used for Hanford.

Details of the air quality impact assessment methodology and analysis are discussed further in Appendix G.

F.5 GEOLOGY AND SOILS

F.5.1 Description of Affected Resources

Geologic resources encompass consolidated and unconsolidated earth materials, including rock and mineral assets such as ore and aggregate materials (e.g., sand, gravel) and fossil fuels such as coal, oil, and natural gas. Geologic conditions include hazards such as earthquakes, faults, volcanoes, landslides, sinkholes, and other conditions leading to land subsidence and unstable soils. Soil resources include the loose surface materials of the earth in which plants grow, usually consisting of mineral particles from disintegrating rock, organic matter, and soluble salts. Certain soils are important farmlands that are designated as such by the U.S. Department of Agriculture Natural Resources Conservation Service. Its regulations define important farmlands, including prime, unique, and other farmland of statewide or local importance (7 CFR 657.5), that may be subject to the Farmland Protection Policy Act (7 U.S.C. 4201 et seq.).

Geology and soils were considered with respect to those attributes and geologic and soil resources that could be affected by the alternatives, as well as those geologic conditions that could affect each alternative and associated facilities. The ROI for geology and soils includes the Hanford and INL affected facility areas and nearby offsite areas that are subject to disturbance due to facility construction, decontamination and decommissioning (D&D), and tank closure activities, as well as those areas beneath existing or new facilities that would remain inaccessible for the life of the facilities. Conditions that could affect the integrity and safety of existing or proposed new facilities over the timeframe associated with each alternative include large-scale geologic hazards (e.g., earthquakes, volcanic activity, landslides, and land subsidence) and local hazards associated with the site-specific attributes of the soil and bedrock beneath the site facilities. Thus, the area within which these geologic conditions exist is also used to define the ROI for this resource area.

F.5.2 Description of Impact Assessment

Construction, operations, deactivation, closure, and D&D activities under each of the alternatives were considered from the perspective of direct impacts on specific geologic resources and soil attributes to encompass the consumption of geologic resources. Facility construction, D&D, and tank closure activities were the focus of the impact assessment for geologic and soil resources; hence, the key factors in the analysis were the (1) land area to be disturbed and geologic resources consumed to support the alternatives considered; (2) depth and extent of excavation work to support facility construction, facility D&D, and closure activities; (3) land areas occupied during operations; and (4) identification of unstable geologic strata (such as soils or sediments prone to subsidence, liquefaction, shrink-swell, or erosion) (see Table F–6).

Table F–6. Geology and Soils Impact Assessment Protocol

Resource	Required Data		Measure of Impact
	Affected Environment	Alternative	
Geologic hazards	Presence of geologic hazards within the region of influence	Location of facilities	Potential for damage to facilities
Mineral and energy resources	Presence of any rare and/or valuable mineral or energy resources on the site and availability of geologic resources within the region of influence	Location of facilities and project activity demands	Potential to consume, destroy, or render resources inaccessible
Important farmland soils	Presence of prime or other important farmland soils near the facility site locations	Location of facilities	Conversion of important farmland soils to nonagricultural use

The geology and soils impacts analysis also considered risks to facilities (existing, new, or modified) from large-scale geologic hazards such as faulting and earthquakes, lava extrusions and other volcanic activity, landslides, and sinkholes (i.e., conditions that tend to affect broad expanses of land). In general, the facility hazard assessment was based on the presence of any identified hazard and the distance of the facilities from it. This element of the assessment included collection of site-specific information regarding the potential for impacts on site facilities from local and large-scale geologic conditions. Historical seismicity within an approximate 805-kilometer (500-mile) radius of Hanford was reviewed, and potential earthquake source areas were identified as a means of assessing the potential for future earthquake activity. Earthquakes are described in this *TC & WM EIS* in terms of classification scheme and parameters, as presented in Table F–7. Probabilistic earthquake ground-motion data, including peak (horizontal) ground acceleration and response spectral acceleration, were evaluated for select facility areas to provide a comparative assessment of seismic hazard.

Estimates of probabilistic ground motion at a particular location consider earthquake-shaking at all future possible earthquake magnitudes and at all possible distances from the location (USGS 2008a). Peak ground acceleration indicates what an object on the ground would experience during an earthquake and approximates what a short structure would be subjected to in terms of horizontal force. It does not account for the range of energies experienced by a building during an earthquake, particularly taller buildings. Measures of spectral acceleration account for the natural period of vibration of structures (short buildings have short natural vibration periods [up to 0.6 seconds], and taller buildings have longer vibration periods [0.7 seconds or longer]) (USGS 2008b). Both parameters are used by the U.S. Geological Survey (USGS) National Seismic Mapping Project. USGS's latest National Earthquake Hazards Reduction Program (NEHRP) maps are based on spectral acceleration and depict maximum considered earthquake ground motions of 0.2- and 1.0-second spectral accelerations based on a 2 percent probability of exceedance in 50 years (corresponding to an annual probability of occurrence of about 1 in 2,500). The NEHRP maps have been adapted for use in the seismic design portions of the International Building Code (USGS 2007).

The NEHRP maps were developed based on the recommendations of the Building Seismic Safety Council's Seismic Design Procedures Group (BSSC 2004a, 2004b). The Seismic Design Procedures Group–recommended maximum considered earthquake ground-motion maps are derived from the USGS probabilistic hazard maps with additional modifications that incorporate deterministic ground motions in selected areas and the application of engineering judgment (USGS 2007). Note that the maximum considered earthquake maps are based on a reference site condition (firm rock) and are suitable for determining estimates of maximum considered earthquake ground shaking for design purposes at most sites. For sites with nonreference conditions and for design of buildings requiring a higher degree of seismic safety, site-specific design procedures must be used (BSSC 2004b:17, 18).

U.S. Department of Energy (DOE) Order 420.1B specifically requires nuclear and nonnuclear facilities to be designed, constructed, and operated so that the public, workers, and environment are protected from the adverse impacts of natural phenomena hazards, including earthquakes. The order stipulates natural phenomena hazards mitigation requirements for DOE facilities and specifically provides for re-evaluation and upgrade of existing DOE facilities where there is a significant degradation in the safety basis for the facility. DOE Standards 1020-2002 and 1023-95 implement DOE Order 420.1B and provide criteria for design of new structures, systems, and components, as well as for evaluation, modification, or upgrade of existing structures, systems, and components, so that DOE facilities can safely withstand the effects of natural phenomena hazards such as earthquakes. The criteria specifically reflect adoption of the seismic design and construction provisions and associated seismic hazard maps of the International Building Code as the minimum standard for design and evaluation of DOE facilities (i.e., for Performance Category 1 and 2 structures, systems, and components). For structures, systems, and components requiring a higher level of performance from a safety perspective (i.e., Performance Category 3 and 4), a more rigorous design analysis is required, including performance of a probabilistic seismic hazard assessment to determine the design-basis earthquake.

Table F–7. The Modified Mercalli Intensity Scale of 1931 with Generalized Correlations to Magnitude, Earthquake Classification, and Peak Ground Acceleration

Modified Mercalli Intensity[a]	Observed Effects of Earthquake[a]	Approximate Magnitude[b]	Class	Peak Ground Acceleration[c] (g)
I	Usually not felt except by a very few persons under very favorable conditions.	Less than 3	Micro	Less than 0.0017
II	Felt by only a few persons at rest, especially on the upper floors of buildings.	3 to 3.9	Minor	0.0017 to 0.014
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck.			
IV	Felt indoors by many; outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sounds. Sensation like heavy object striking building. Standing motorcars rock noticeably.	4 to 4.9	Light	0.014 to 0.039
V	Felt by nearly everyone; many awakened. Some dishes and windows broken. Unstable objects overturned. Pendulum clocks may stop.			0.039 to 0.092
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	5 to 5.9	Moderate	0.092 to 0.18
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.	6 to 6.9	Strong	0.18 to 0.34
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings, with partial collapse. Damage great in poorly built structures. Falling chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	7 to 7.9	Major	0.34 to 0.65
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.			0.65 to 1.24
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.			1.24 and higher
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.	8 and higher	Great	
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.			

[a] Intensity is a unitless expression of observed effects of earthquake-produced ground shaking. Effects may vary greatly between locations based on earthquake magnitude, distance from the earthquake, and local subsurface geology. The descriptions given are abbreviated from the Modified Mercalli Intensity Scale of 1931.

[b] Magnitude is a logarithmic measure of the strength (size) of an earthquake related to the strain energy released by it. There are several magnitude "scales" (mathematical formulas) in common use, including local "Richter" magnitude, body-wave magnitude, and surface-wave magnitude. Each has applicability for measuring particular aspects of seismic signals and may be considered equivalent within each scale's respective range of validity. For very large earthquakes, the moment magnitude scale provides the best overall measurement of earthquake size.

[c] Acceleration is expressed as a factor that should be multiplied by Earth's gravitational acceleration (g) (i.e., g is equal to 980 centimeters [386 inches] per second squared). Given values are correlated to Modified Mercalli Intensity based on measurements of California earthquakes (Wald et al. 1999). Site-specific earthquake history, ground motion, and risk assessment data for the Hanford Site and Idaho National Laboratory are presented in Chapter 3, Sections 3.2.5.1.4 and 3.3.5.1.4, respectively.

Key: g=gravitational acceleration.

Source: Compiled from USGS 2008c, 2008d; Wald et al. 1999.

An evaluation was also performed to determine whether estimated requirements for rock, aggregate, soil, and products derived from rock and mineral resources used to support tank waste retrieval, treatment, and disposal; tank closure; and related D&D activities under each of the alternatives could exceed available resource reserves or stockpiles in the ROI. For example, this analysis included provision of borrow materials from onsite quarries and borrow pits to support construction of surface barriers for landfill closure of tank farms and waste disposal sites and to provide backfill for clean closure of tank farms under select alternatives. This was accomplished by comparing projections of resource demands for construction, operations, deactivation, closure, and D&D with resource availability analyses for the site and the region. In addition, the analysis of impacts on geologic resources included a determination of whether the proposed activities at a specific site could destroy or preclude the use of valuable rock, mineral, or energy resources.

Pursuant to the Farmland Protection Policy Act of 1981 (7 U.S.C. 4201 et seq.) and its implementing regulations, the presence of important farmland soils, including prime farmland, was also evaluated. This act requires agencies to make Farmland Protection Policy Act evaluations part of the National Environmental Policy Act process to reduce the conversion of farmland to nonagricultural uses by Federal projects and programs. However, otherwise qualifying farmlands in or already committed to urban development; land acquired for a project on or prior to August 4, 1984; and lands acquired or used by a Federal agency for national defense purposes are exempt from the act's provisions (7 CFR 658.3 and 658.7).

F.6 WATER RESOURCES

F.6.1 Description of Affected Resources

Water resources are the surface and subsurface waters that are suitable for human consumption, aquatic or wildlife use, agricultural purposes, irrigation, recreation, or industrial/commercial purposes. The ROI used for water resources encompasses those surface-water and groundwater systems at Hanford and INL that could be impacted by water withdrawals, effluent discharges, and spills or stormwater runoff associated with facility construction, operations, deactivation, closure, and related D&D activities under the alternatives. As such, the assessment methodologies described in the following subsections relate to the analysis of the proposed activities under the various alternatives and options that would generally result in short-term impacts (i.e., impacts limited to the timeframe during which the activity would be performed). The impact methodologies employed to assess the potential for long-term impacts on surface-water and groundwater resources of past releases to the vadose zone and groundwater at Hanford, as well as of waste retrieval and disposal and tank closure, in particular, are described in the introduction to Chapter 5, as well as Appendices M, N, and O.

F.6.2 Description of Impact Assessment

Analysis of the potential impacts on water resources consisted of comparing project activity data and best-available engineering-basis estimates regarding water use and effluent discharges with applicable regulatory standards, design parameters and standards commonly used in the water and wastewater engineering fields, and recognized measures of environmental impact. Certain assumptions were made to facilitate the impacts assessment: (1) all water supply production and treatment facilities and the Effluent Treatment Facility would be available and upgraded as necessary in accordance with the timeframe considered under each alternative; (2) the Effluent Treatment Facility would meet the effluent limitations imposed by the respective National Pollutant Discharge Elimination System permits and/or the state-issued discharge permit; and (3) any stormwater runoff from construction and operations activities would be handled in accordance with the regulations of the appropriate permitting authority. It was also assumed that, during construction and other land-disturbing activities, sediment fencing or other erosion-control devices would be used to mitigate short-term adverse impacts of sedimentation and, as appropriate, stormwater holding ponds would be constructed to lessen the impacts of runoff on surface-water quality.

F.6.2.1 Water Use and Availability

Impacts on water use and availability were generally assessed by determining changes in the volume of current water usage and effluent discharges as a result of the proposed activities (see Table F–8). Where project activities were assumed to use surface water, no credit was taken for effluent discharges back to surface waters.

Table F–8. Water Use and Availability Impact Assessment Protocol

Resource	Required Data		Measure of Impact
	Affected Environment	Alternative	
Surface-water availability	Surface waters near the facilities, including average flow, low flow, and current usage	Volume of withdrawals from, and discharges to, surface waters	Changes in availability to local/downstream users of water for human consumption, irrigation, or animal feeding
Groundwater availability	Groundwater near the facilities, including existing water rights for major water users and current usage	Volume of withdrawals from, and discharges to, groundwater	Changes in availability of groundwater for human consumption, irrigation, or animal feeding

F.6.2.2 Water Quality

The water quality impact assessment for this *TC & WM EIS* analyzed how routine effluent discharges and nonroutine releases (e.g., spills, containment failure) to surface water, as well as discharges reaching groundwater, from new facilities required under each alternative could potentially affect current water quality over the short term. The impacts of the alternatives were assessed as summarized in Table F–9, including a comparison of the projected effluent quality with relevant regulatory standards and implementing regulations, such as the Clean Water Act of 1972 (33 U.S.C. 1251 et seq.), Safe Drinking Water Act of 1974 (42 U.S.C. 300(f) et seq.), state laws, and existing site permit conditions. The impact analyses evaluated the potential for contaminants to affect receiving water quality as a result of spills and other releases under the alternatives. Separate analyses were conducted for surface water (see Chapter 4, Section 4.1.6) and groundwater (see Chapter 5, Section 5.1.1, and Appendices M, N, and O) impacts.

Table F–9. Water Quality Impact Assessment Protocol

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Surface-water quality	Surface waters near the facility locations in terms of stream classifications and changes in water quality	Expected contaminants and contaminant concentrations in discharges to surface waters	Exceedance of relevant surface-water quality criteria or standards under the Clean Water Act or state regulations and existing permits
Groundwater quality	Groundwater near the facility locations in terms of classification, presence of designated sole-source aquifers, and changes in quality of groundwater	Expected contaminants and contaminant concentrations in discharges that could reach groundwater	Contaminant concentrations in groundwater exceeding relevant standards or criteria established in accordance with the Safe Drinking Water Act or state regulations and/or existing permits

F.6.2.2.1 Surface-Water Quality

The evaluation of potential short-term surface-water-quality impacts focused on the quality and quantity of any effluents (including stormwater) discharged as a result of new facility construction, operations, facility D&D, and tank closure activities, as well as other releases, and the quality of the receiving stream up- and downstream from the discharges. The evaluation of effluent quality featured a review of the expected parameters, such as the expected average and maximum flows and the nature of, and parameter concentrations in, expected effluents. Parameters of concern included total suspended solids, heavy metals, radionuclides, organic and inorganic chemicals, and any other constituents that could affect the local environment. Factors that currently degrade water quality were also identified. Data from existing water-quality data sources were compared with expected discharges from the facilities to determine the potential for, and relative impacts on, surface waters.

F.6.2.2.2 Groundwater Quality

Potential short-term groundwater quality impacts associated with effluent discharges and other contaminant releases associated with new facility construction, operations, D&D, and tank closure were examined. Available engineering estimates of contaminant concentrations were weighed against applicable Federal and state groundwater quality standards, effluent limitations, and drinking water standards to determine the impacts of each alternative. In addition, the consequences of groundwater use, including dewatering, and effluent discharges on other site groundwater conditions were evaluated. The methods employed to evaluate long-term surface-water and groundwater impacts are presented in Appendices M, N, and O.

F.6.2.3 Waterways and Floodplains

The locations of waterways (e.g., ponds, lakes, streams) and delineated floodplains or zones were identified from maps and other existing documents to assess the potential for impacts resulting from proposed new facility construction and facility modification and operations, including direct effects on hydrologic characteristics.

F.7 ECOLOGICAL RESOURCES

F.7.1 Description of Affected Resources

Ecological resources include terrestrial and aquatic resources (plants and animals), threatened and endangered species, and wetlands that could be affected by the alternatives. The ROI evaluated for ecological impacts encompasses those areas within the 200 Areas, the 400 Area, and Borrow Area C that would be potentially disturbed by facility construction, operations, deactivation, and closure. At Hanford, surveys of facility locations were conducted to determine whether important ecological resources were present (Sackschewsky 2003a, 2003b; Sackschewsky and Downs 2007).

Terrestrial resources are defined as those plant and animal species and communities that are most closely associated with the land; for aquatic resources, a water environment. Wetlands are defined by the U.S. Army Corps of Engineers and EPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3).

Endangered species are defined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) as those in danger of extinction throughout all or a large portion of their range. Threatened species are defined as those species likely to become endangered within the foreseeable future. The U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration propose the addition of species to the lists of threatened and endangered species. They also maintain a list of "candidate" species for which they have evidence that listing may be warranted, but is currently precluded by the need to list species more in need of Endangered Species Act protection. Candidate species do not receive legal protection under the Endangered Species Act, but should be considered in project planning in case they are listed in the future. Critical habitat for threatened and endangered species is designated by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. Critical habitat is defined as a specific area that contains physical and biological features essential to the conservation of species and that may require special management consideration or protection. The States of Washington and Idaho designate species as endangered or threatened, as well as a number of other special-status designations.

F.7.2 Description of Impact Assessment

Impacts on ecological resources may occur as a result of land disturbance, water use, human activity, and noise from construction, operation, and deactivation of facilities associated with the various alternatives (see Table F–10). Night lighting may also impact site ecology. Each of these factors was considered when evaluating the potential impacts of the proposed activities. Terrestrial resources could be directly affected through destruction or modification of habitat. Likely impacts include increased direct mortality and susceptibility to predation. Activities associated with each alternative (e.g., human intrusion and noise) could also cause wildlife to move to adjacent areas with similar habitat. If the receiving areas were already supporting the maximum sustainable number of individuals, competition for limited resources and habitat degradation could result in the loss of some individuals. Therefore, analysis of impacts on terrestrial wildlife was based largely on the extent of plant community loss or modification. Indirect impacts of factors such as human disturbance, noise, and night lighting were evaluated qualitatively.

Impacts on ecological resources may also occur as a result of exposure to radionuclide and chemical air emissions, and surface-water and groundwater contamination under all alternatives. Appendix P describes impact assessment methods and summarizes the results of the impact assessments on ecological resources at both on- and offsite locations. Potential impacts are assessed by comparing predicted exposure concentrations and doses with published effects-based threshold concentrations and doses.

Exposures above effects-based thresholds could potentially cause reduced fertility or increased mortality in exposed populations.

Table F–10. Ecological Resources Impact Assessment Protocol

Resource	Required Data		Measure of Impact
	Affected Environment	Alternative	
Terrestrial resources	Terrestrial vegetation and wildlife within the vicinity of facilities	Area disturbed by facility site activities, air emissions, wastewater discharges, and noise	Loss of or disturbance to species and their habitat; emissions and noise values above levels shown to cause impacts on terrestrial resources
Aquatic resources	Aquatic resources within the vicinity of facilities	Facility area air emissions, water source and quantity, and wastewater discharge locations and quantities	Discharges above levels shown to cause impacts on aquatic resources
Wetlands	Wetlands within the vicinity of facilities	Area disturbed by facility site activities, air emissions, and wastewater discharge locations and quantities	Loss of or disturbance to wetlands
Threatened and endangered species	Threatened and endangered species, as well as their habitat, within the vicinity of facilities	Area disturbed by facility site activities, air emissions, noise, water sources and quantities, and wastewater discharge locations and quantities	Similar to measures used in evaluating other terrestrial and aquatic resources and habitats

Project activity impacts on threatened and endangered species, as well as other special status species, and their habitats were determined in a manner similar to that used to evaluate impacts on other terrestrial and aquatic resources and habitats. A list of sensitive species that could be present at each site was compiled. Informal consultations were initiated with the appropriate U.S. Fish and Wildlife Service offices and state-equivalent agencies as part of the impact assessment for sensitive species (see Appendix C).

F.8 CULTURAL RESOURCES

F.8.1 Description of Affected Resources

Cultural resources are indications of human occupation and use of property as defined and protected by a series of Federal laws, regulations, and guidelines. For this *TC & WM EIS*, potential impacts were assessed separately for each of the cultural resource categories: prehistoric resources, historic resources, and American Indian interests. Paleontological resources are the physical remains, impressions, or traces of plants or animals from a former geologic age and may be sources of information on ancient environments and the evolutionary development of plants and animals. Although not governed by the same historic preservation laws as cultural resources, they could be affected by the proposed actions in much the same manner.

Prehistoric resources are the physical remains of human activities that predate written records. They generally consist of artifacts that may either alone or collectively yield information about the past. Historic resources consist of physical remains that postdate the emergence of written records. In the United States, they are architectural structures or districts, archaeological objects, and archaeological features dating from 1492 and later. Ordinarily, sites less than 50 years old are not considered historic, but exceptions are made for properties of particular importance such as structures associated with World War II or Cold War themes. American Indian interests include sites, areas, and materials considered important to American Indians for religious or heritage reasons. Such interests may include geographic features, plants, animals, cemeteries, battlefields, trails, and environmental features. The ROI for cultural resource analysis encompasses Hanford, including the 200 Areas, 400 Area, and Borrow Area C, as well as areas immediately surrounding the site that potentially would be disturbed by facility construction and other activities and would be occupied during operations of facilities for tank waste retrieval, treatment, and disposal and/or tank closure.

F.8.2 Description of Impact Assessment

The analysis of impacts on cultural resources addressed potential direct and indirect impacts at each facility site location (see Table F–11). To determine whether cultural resources were present, a number of surveys were conducted of facility locations within and adjacent to the 200 Areas, 400 Area, and Borrow Area C (Chatters and Cadoret 1990; Duncan 2007; PNNL 2003, 2007).

Table F–11. Cultural Resources Impact Assessment Protocol

Resource	Required Data		Measure of Impact
	Affected Environment	Alternative	
Paleontological resources	Paleontological resources within the vicinity of facilities	Location of facilities on the site and facility acreage requirements	Potential for loss, isolation, or alteration of paleontological resources
Prehistoric and historic resources	Prehistoric and historic resources within the vicinity of facilities		Potential for loss, isolation, or alteration of the character of prehistoric and historic resources; introduction of visual, audible, or atmospheric elements that are out of character; neglect of resources listed, or eligible for listing, on the National Register of Historic Places
American Indian interests	American Indian interests within the vicinity of facilities		Potential for loss, isolation, or alteration of the character of American Indian interests; introduction of visual, audible, or atmospheric elements that are out of character

Potential indirect impacts include those associated with reduced access to a resource site, as well as those associated with increased traffic and visitation to sensitive areas. Direct impacts include those resulting from facilities for tank waste management. Consultations to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.) were conducted with the State Historic Preservation Officer. Correspondence offering consultation was sent to local American Indian tribes (see Appendix C). The cultural resources assessment methodology and analysis are discussed further in Chapter 3, Section 3.2.8.

F.9 PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY

F.9.1 Description of Affected Resources

Public and occupational health and safety analysis examines the potential adverse human health effects of exposure to ionizing radiation and hazardous chemicals. Health effects are determined by identifying the types and quantities of additional radioactive materials and toxic chemicals to which individuals may be exposed and estimating doses or exposures and the resulting indicators of health effects (latent cancer fatalities [LCFs], emergency exposure air concentration guidelines). The impacts of various releases during both normal activities (facility operations, construction, demolition) and postulated accidents on the health of workers and the public were assessed using site-specific factors such as meteorology, population distribution, and distance to nearby receptors. The number of people in the 80-kilometer (50-mile) ROI and their distribution are based on the U.S. Census Bureau's 2010 decennial census (Census 2011a). More-detailed information on the types and quantities of materials released during normal operations and accident conditions is provided in Appendix K.

F.9.2 Description of Impact Assessment

Health effects, in terms of incremental doses or exposures and related risks (LCFs or relationship to exposure thresholds), were assessed based on the types and quantities of materials released. Impacts on involved workers are estimated based on operational experience, engineering estimates, and administrative control levels. Models were used to estimate impacts on the health of noninvolved workers and the public resulting from releases during normal (incident-free) operations. The models included the following:

- GENII [Hanford Environmental Radiation Dosimetry Software System, Generation II], Version 2, for all radioactive air emissions during normal operations (Napier 2007). GENII was selected as an appropriate model for radiation dose analysis because it was developed to model, among other things, radiation doses to individuals and populations from routine releases of radioactive materials into the air and water.

- MACCS [MELCOR Accident Consequence Code System], Version 1.13.1 (MACCS2), for all radioactive materials released during accident conditions (Chanin and Young 1997). MACCS2 was selected as an appropriate model because it was developed for DOE and the U.S. Nuclear Regulatory Commission to calculate radiation doses caused by airborne release of a wide range of radioisotopes. It is specifically recommended by DOE for calculating radiological accident consequences and risks in EISs.

- EPIcode [Emergency Prediction Information Code], Version 7.0, for all hazardous chemicals released during accident conditions (Homann 2003). As one of the computer models included in the DOE Safety Software Central Registry, EPIcode was selected to perform estimates of atmospheric dispersion and resultant downwind concentrations of hazardous chemicals for comparison with human health limits. The codes included in the registry have been determined to be compliant with the DOE Safety Software Quality Assurance requirements (DOE Order 414.1D). These codes are recommended for use by DOE to perform calculations and develop data used to establish the safety basis for DOE facilities and their operation, as well as to support the variety of safety analyses and evaluations developed for these facilities.

Detailed discussions of the application of these models are provided in Appendix K.

F.10 TRANSPORTATION

F.10.1 Description of Affected Resources

Transportation of any commodity involves a risk to both transportation crewmembers and members of the public. This risk results directly from transportation-related accidents and indirectly from increased levels of pollution from vehicle emissions, regardless of the cargo. Transportation of certain materials such as hazardous or radioactive waste can pose an additional risk due to the unique nature of the materials themselves. To permit a complete appraisal of the environmental impacts of the proposed actions and alternatives, the human health risks associated with transportation of radioactive materials on public highways and railroads were assessed.

Transportation impacts consist of two parts: the impacts of incident-free (routine) transportation and those of transportation accidents. Incident-free transportation and transportation accident impacts may be nonradiological, radiological, or both. Incident-free transportation impacts include radiological impacts on the public and the workers due to the radiation field surrounding the transportation package. Nonradiological impacts of potential transportation accidents include traffic accident fatalities.

Transportation-related risks were calculated and presented separately for workers (truck or rail drivers) and members of the general public (residing or traveling in vehicles along the routes and present at rest and refueling stops). For the incident-free operation, the ROI for the affected population includes individuals living within 800 meters (0.5 miles) of each side of the road or rail. For accident conditions, the ROI for the affected population includes individuals residing within 80 kilometers (50 miles) of the accident; the maximally exposed individual would be an individual located 100 meters (330 feet) directly downwind from the accident. The risk to the affected population is a measure of the radiological risk posed to society as a whole by the alternative being considered. As such, the impact on the affected population was used as the primary means of comparing various alternatives.

F.10.2 Description of Impact Assessment

The impact of a specific radiological accident is expressed in terms of probabilistic risk, which is defined as the accident probability (i.e., accident frequency) multiplied by the accident consequences. The overall risk is obtained by summing the individual risks from all reasonably conceivable accidents. Only as a result of a severe fire and/or a powerful collision, which have extremely low probabilities, could a transportation package of the type used to transport radioactive material be damaged to the extent that a release of radioactivity to the environment with significant consequences could occur. In addition to calculating the radiological risks that would result from all reasonably conceivable accidents during transportation of radioactive waste, the consequences of maximum reasonably foreseeable accidents, events with a probability greater than 1×10^{-7} (1 chance in 10 million) per year, were assessed. The latter consequences were determined for atmospheric conditions that would likely prevail during accidents. The analysis used the RISKIND code to estimate doses to individuals and populations (Yuan et al. 1995).

The risks of incident-free effects are expressed in additional LCFs. The risks of radiological accidents are expressed as additional LCFs and, for nonradiological accidents, as additional immediate (traffic) fatalities.

In determining the transportation risks, per-shipment risk factors were calculated for both incident-free and accident conditions using the RADTRAN 5 computer program (Neuhauser and Kanipe 2003) in conjunction with the TRAGIS [Transportation Routing Analysis Geographic Information System] computer program (Johnson and Michelhaugh 2003), which was used to choose representative routes in accordance with U.S. Department of Transportation regulations. The TRAGIS program provides population estimates along the representative routes that are used to determine the population radiological risk factors. These population estimates, generated using data from the 2000 census, are escalated using state-level 2010 census data (Census 2010) that have been adjusted to be route specific, based on the distance of the route in each state. Details on the analysis approach, modeling, and parameter selections are provided in Appendix H, Sections H.4 and H.5.

F.11 SOCIOECONOMICS

F.11.1 Description of Affected Resources

Socioeconomic impacts are defined in terms of changes to the demographic and economic characteristics and social conditions of a region. For example, the number of jobs created by the proposed actions could affect regional employment, income, and expenditures. Job creation is generally characterized by two types: (1) construction-related jobs, which are transient in nature and limited in duration, and thus less likely to have a longer-term socioeconomic impact; and (2) operations-related jobs in support of facility operations, which are required for a longer period of time and have a greater potential for permanent socioeconomic impacts in the ROI. The ROI for socioeconomics encompasses the counties in which more than 90 percent of the site workers live.

The socioeconomic environment generally includes regional economic indicators, demographic characteristics, and community services available in the area. Economic indicators include employment, the civilian labor force, and unemployment rates. Demographic and community service characteristics include population, housing, education, health, and local transportation information.

F.11.2 Description of Impact Assessment

For each county in the ROI, data were compiled on current socioeconomic conditions, including employment, the civilian labor force, and unemployment. Census data were compiled for population, housing, and community services. Census Bureau population estimates for the ROIs were combined with overall projected workforce requirements for each alternative to determine the extent of impacts on regional economic and demographic (population) characteristics, including levels of demand for housing and community services, and local transportation impacts (see Table F–12).

Table F–12. Socioeconomics Impact Assessment Protocol

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Regional Economic Characteristics			
Workforce requirements	Site workforce projections from the Hanford Site and Idaho National Laboratory	Estimated construction, operations, deactivation, and closure activity staffing requirements and timeframes	Workforce requirements added to sites' workforce projections
Region of influence—civilian labor force	Labor force estimates from the U.S. Census Bureau	Estimated construction, operations, deactivation, and closure activity staffing requirements and timeframes	Workforce requirements as a percentage of the civilian labor force
Employment rate	Latest available employment estimates in counties surrounding both sites from the U.S. Census Bureau	Estimated construction, operations, deactivation, and closure activity staffing requirements and timeframes	Potential change in unemployment

Table F–12. Socioeconomics Impact Assessment Protocol *(continued)*

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Demographic Characteristics			
Population and demographics of race, ethnicity, and income	Latest available estimates by county from the U.S. Census Bureau	Estimated effect on population	Potential effects on population
Housing and Community Services			
Housing—percent of occupied housing units (houses and apartments)	Latest available ratios from the U.S. Census Bureau	Estimated housing unit requirements	Potential change in housing unit availability
Public education • Total enrollment • Teacher-student ratio	Latest available information for local school districts or state and county estimates	Estimated effect on enrollment and teacher-student ratio	Projected change in teacher-student ratio
Health care—number of hospital beds and physicians per 1,000 residents	Latest available rates from the U.S. Census Bureau	Estimated effect on health care services	Potential change in the availability of hospital beds or physicians
Local Transportation			
Traffic—number of vehicles	Latest available information on traffic conditions affecting site access roads and intrasite road and local regional transportation networks	Estimated number of commuter and truck vehicle trips to and from the site	Projected change in traffic conditions

F.12 WASTE MANAGEMENT

F.12.1 Description of Affected Resources

Depending on the alternative, the construction, operation, deactivation, and decommissioning of facilities associated with tank waste retrieval, treatment, and disposal and tank closure would result in the following waste types:

- Immobilized high-level radioactive waste—High-level radioactive waste (HLW) that would be immobilized in a borosilicate glass matrix, resulting in a glass waste form.
- Mixed transuranic (TRU) waste—Radioactive waste that is not classified as HLW and contains more than 100 nanocuries of alpha-emitting TRU isotopes per gram of waste with half-lives greater than 20 years, as well as hazardous components regulated under the Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. 6901 et seq.). All TRU waste would be managed as mixed TRU waste.
- Low-level radioactive waste (LLW)—Radioactive waste that is not classified as HLW, TRU waste, spent nuclear fuel, the tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material, or naturally occurring radioactive material.

- Immobilized low-activity waste (ILAW)—Low-activity waste (LAW) immobilized by the Hanford Waste Treatment Plant (WTP) or processed by supplemental treatment (e.g., bulk vitrification, cast stone, or steam reforming). After receiving the necessary approvals, ILAW would be managed as LLW incidental to reprocessing, as defined in DOE Manual 435.1-1. Because it would be a product of Hanford tank waste treatment, it would also be managed as a mixed waste.

- Mixed LLW (MLLW)—LLW that also contains hazardous components regulated under RCRA (42 U.S.C. 6901 et seq.).

- WTP HLW retired melters—Large-capacity, joule-heated, ceramic-lined melters with a theoretical maximum capacity of 3 metric tons of glass per day per melter. These would be managed as HLW.

- LAW retired melters—Large-capacity, joule-heated, ceramic-lined melters with a theoretical maximum capacity of 15 metric tons of glass per day per melter. These would be managed as MLLW.

- Hazardous and dangerous waste—Under RCRA, a solid waste that, because of its characteristics, may (1) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous waste appears on special EPA lists or possesses at least one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. This category does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.). Hazardous waste may also include solid waste designated by Washington State as dangerous, extremely hazardous or mixed waste, acute hazardous waste, or special waste (WAC 173-303-070 through WAC 173-303-100).

- Nonhazardous solid waste—Discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. This category does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act (42 U.S.C. 2011 et seq.).

The alternatives could have an impact on existing Hanford facilities devoted to the treatment, storage, and disposal of these categories of waste.

F.12.2 Description of Impact Assessment

As shown in Table F–13, impacts were assessed by comparing the projected waste stream volumes generated from the proposed activities under each alternative with the site's waste management capacities and generation rates. Projected waste generation rates for the proposed activities and projected waste shipments from offsite sources were compared with the site's capacity to manage the waste.

Only the impacts relative to the capacities of the waste management facilities were considered; other environmental impacts of waste management facility operations (human health effects) were evaluated in other sections of this *TC & WM EIS* or in other facility-specific or sitewide National Environmental Policy Act documents. Projected waste generation rates for the proposed activities were compared with site processing rates and the capacities of the treatment, storage, and disposal facilities likely to be involved in managing the additional waste.

Table F–13. Waste Management Impact Assessment Protocol

Resource	Required Data: Affected Environment	Required Data: Alternative	Measure of Impact
Waste management capacity • IHLW • TRU waste • Mixed TRU waste • LLW • ILAW • MLLW • Hazardous waste • Nonhazardous waste • Waste Treatment Plant HLW retired melters • LAW retired melters	Site generation rates (cubic meters per year) for each waste type Offsite shipments (cubic meters per year) for each waste type Site management capacities (cubic meters) or rates (cubic meters per year) for potentially affected treatment, storage, and disposal facilities for each waste type	Generation rates (cubic meters per year) for each waste type	Combination of facility waste generation volumes and other site generation volumes in comparison with the capacities of applicable waste management facilities

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; ILAW=immobilized low-activity waste; LAW=low-activity waste; LLW=low-level radioactive waste; MLLW=mixed low-level radioactive waste; TRU=transuranic.

F.13 ENVIRONMENTAL JUSTICE

F.13.1 Description of Affected Resources

Environmental justice analysis assesses the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations resulting from implementation of the alternatives in this *TC & WM EIS*. In assessing the impacts, the following definitions of minority individuals and populations and low-income populations were used:

- Minority individuals are identified as members of the following population groups: Hispanic or Latino, American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, or two or more races.

- Minority populations are identified where either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

- Low-income populations are identified in an affected area using the annual statistical poverty thresholds from the Census Bureau's Current Population Reports, Consumer Income, Series P60-239, *Income, Poverty, and Health Insurance Coverage in the United States: 2010* (DeNavas-Walt, Proctor, and Smith 2011). In 2010, the poverty threshold for an individual living in the United States was an annual income of $11,344. Poverty estimates generated from the Census Bureau's American Community Survey (ACS) period estimates use annual poverty thresholds adjusted for inflation using the consumer price index for all urban consumers published by the U.S. Bureau of Labor Statistics (Census 2011b).

Consistent with the impacts analysis for the public and occupational health and safety, the affected populations were defined as those minority and low-income populations that reside within an 80-kilometer (50-mile) radius centered on the candidate facilities at Hanford and INL. Data relative to race and ethnicity were compiled from the *2010 Decennial Census*, *Summary File 1*, Table P5, Hispanic or Latino Origin by Race (Census 2011a). The most up-to-date data from the *2006–2010 American Community Survey 5-Year Estimates*, Table C17002, Ratio of Income to Poverty in the Past 12 Months, were used to identify low-income populations in this analysis (Census 2011c). The ACS 5-year estimates are the only data sets currently published by the Census Bureau that provide data regarding income and poverty at the block-group level of geography. Historically, data relative to income and poverty are published in the decennial census Summary File 3 (Census 2007). Summary File 3 contains statistics generated based on sample data from the census long form. The 2010 decennial census did not include a separate form for sample data; therefore, it did not contain any data based on sampling. All sample data are now generated from the ACS program. Appendix J details the process by which the affected populations were determined.

F.13.2 Description of Impact Assessment

Adverse health effects are measured in risks and exposure rates that could result in LCFs, as well as other fatal or nonfatal adverse impacts on human health. Disproportionately high and adverse human health effects occur when the risk of, or rate of exposure to, an environmental hazard for a minority or low-income population is significant and exceeds the risk or exposure rate for the general population or for another appropriate comparison group. The minority and low-income populations are subsets of the general public residing around Hanford and INL; all are exposed to the same hazards generated from various operations at the site. Therefore, estimates of the environmental justice impacts were determined using either the human health risk results or similar methods provided in Appendices H, K, Q, and R. Appendix J provides details of the analysis method and the resulting impacts on the affected populations.

F.14 REFERENCES

BLM (U.S. Bureau of Land Management), 1986, *Visual Resource Inventory*, BLM Manual Handbook 8410-1, Washington, D.C., January 17.

BSSC (Building Seismic Safety Council), 2004a, *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures (FEMA 450), 2003 Edition, Part 1: Provisions*, National Institute of Building Sciences, Washington, D.C.

BSSC (Building Seismic Safety Council), 2004b, *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures (FEMA 450), 2003 Edition, Part 2: Commentary*, National Institute of Building Sciences, Washington, D.C.

Census (U.S. Census Bureau), 2007, *Poverty Status in 1989 by Age, 1990 Summary Tape File 3 (STF 3) – Sample Data*, Census 1990 Data Releases, accessed through http://www.census.gov/ on July 17.

Census (U.S. Census Bureau), 2010, *Resident Population Data, Population Density*, accessed through http://2010.census.gov/2010census/data/apportionment-dens-text.php on December 21.

Census (U.S. Census Bureau), 2011a, *2010 Decennial Census Summary File 1*, Table P5 – Hispanic or Latino Origin by Race (Universe – Total Population), accessed through http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml, August 25.

Census (U.S. Census Bureau), 2011b, *American Community Survey*, *Puerto Rico Community Survey*, *2010 Subject Definitions*.

Census (U.S. Census Bureau), 2011c, *2006–2010 American Community Survey 5-Year Estimates*, Table C17002 – Ratio of Income to Poverty Level in the Past 12 Months – Universe: Population for Whom Poverty Status is Determined, accessed through http://www2.census.gov/acs2010_5yr/summaryfile/, December 8.

Chanin, D.I., and M.L. Young, 1997, *Code Manual for MACCS2*, Vol. 1, *User's Guide*, SAND97-0594, Sandia National Laboratories, Accident Analysis/Consequence Assessment Department, Albuquerque, New Mexico, March.

Chatters, J.C., and N.A. Cadoret, 1990, *Archaeological Survey of the 200 East and 200 West Areas, Hanford Site, Washington*, PNL-7264, Pacific Northwest Laboratory, Richland, Washington, March.

DeNavas-Walt, C., B.D. Proctor, and J.C. Smith, 2011, *Income, Poverty, and Health Insurance Coverage in the United States: 2010*, Current Population Reports, Consumer Income, Series P60-239, U.S. Census Bureau, Washington, D.C., September.

Depperschmidt, J.D., 2007, Idaho National Laboratory, Idaho Falls, Idaho, personal communication (email) to M. Burandt, U.S. Department of Energy, Office of River Protection, Richland, Washington, "Fed Ex Address" (regarding response to data request for Idaho National Laboratory, including 2006 nonradiological criteria pollutant releases), May 22.

Duncan, J.P., ed., 2007, *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNNL-6415, Rev. 18, Pacific Northwest National Laboratory, Richland, Washington, September.

EPA (U.S. Environmental Protection Agency), 1974, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, EPA-550/9-74-004, Office of Noise Abatement and Control, March.

EPA (U.S. Environmental Protection Agency), 1995, *SCREEN3 Model User's Guide*, EPA-454/B-95-004, Office of Air Quality Planning and Standards, Emissions, Monitoring and Analysis Division, Research Triangle Park, North Carolina, September.

EPA (U.S. Environmental Protection Agency), 2004, *User's Guide for the AMS/EPA Regulatory Model – AERMOD*, EPA-454/B-03-001, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division, Research Triangle Park, North Carolina, September.

EPA (U.S. Environmental Protection Agency), 2006, *Mid-Atlantic Integrated Assessment: Mid-Atlantic Highlands Streams Assessment*, Appendix C, "Glossary," accessed through http://www.epa.gov/maia/html/mah-apc.html, March 3.

EPA (U.S. Environmental Protection Agency), 2009, *Addendum: User's Guide for the AMS/EPA Regulatory Model – AERMOD (EPA-454/B-03-001, September 2004)*, Office of Air Quality Planning and Standards, Air Quality Assessment Division, Research Triangle Park, North Carolina, October.

Homann, S., 2003, *Introduction to EPIcode*, Version 7.0, Homann Associates, Inc., September.

Johnson, P.E., and R.D. Michelhaugh, 2003, *Transportation Routing Analysis Geographic Information System (TRAGIS) User's Manual*, ORNL/NTRC-006, Rev. 0, Oak Ridge National Laboratory, Oak Ridge, Tennessee, June.

Johnson, R.E., 2006, *Calendar Year 2005 Nonradioactive Inventory of Airborne Emissions Report*, DOE/RL-2006-05, Rev. 0, U.S. Department of Energy, Richland Operations Office and Office of River Protection, Richland, Washington, March.

Napier, B.A., 2007, *GENII – Version 2 Users' Guide,* PNNL-14583, Rev. 2, Pacific Northwest National Laboratory, Richland, Washington, March.

Neuhauser, K.S., and F.L. Kanipe, 2003, *RADTRAN 5 User Guide*, SAND2003-2354, Sandia National Laboratories, Albuquerque, New Mexico, July.

PNNL (Pacific Northwest National Laboratory), 2003. This reference is for Official Use Only.

PNNL (Pacific Northwest National Laboratory), 2007. This reference is for Official Use Only.

Sackschewsky, M.R., 2003a, Pacific Northwest National Laboratory, Richland, Washington, personal communication (letter) to C. Johnson, Science Applications International Corporation, Richland, Washington, "Biological Review of the Tank Waste Retrieval, Treatment, and Disposal EIS Project, 200 E and W Areas, ECR #2003-200-044," September 5.

Sackschewsky, M.R., 2003b, Pacific Northwest National Laboratory, Richland, Washington, personal communication (letter) to C. Johnson, Science Applications International Corporation, Richland, Washington, "Supplemental Biological Review of the Tank Waste Retrieval, Treatment, and Disposal EIS Project, 200 E and W Areas, ECR #2003-200-044a," September 11.

Sackschewsky, M.R., and J.L. Downs, 2007, *Ecological Data in Support of the "Tank Closure and Waste Management Environmental Impact Statement,"* Part 2, "Results of Spring 2007 Field Surveys," PNNL-16620, Pacific Northwest National Laboratory, Richland, Washington, May.

SAIC (Science Applications International Corporation), 2010a, *Tank Closure Alternatives, Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, June 3, August 26, December 10.

SAIC (Science Applications International Corporation), 2010b, *Fast Flux Test Facility Alternatives, Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, November 8.

SAIC (Science Applications International Corporation), 2010c, *Waste Management Alternatives, Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, June 3.

USGS (U.S. Geological Survey), 2007, *Seismic Design Values for Buildings; National Earthquake Hazard Reduction Program (NEHRP) Maps, 1997, 2000*, Earthquake Hazards Program, National Seismic Mapping Project, accessed through http://eqdesign.cr.usgs.gov/html/nehrp-D6.html, http://eqdesign.cr.usgs.gov/html/nehrp.html, January 25.

USGS (U.S. Geological Survey), 2008a, *Earthquake Hazards 201 – Technical Information, What is Probabilistic Ground Motion?, A Simple Description of Seismic Hazard Maps*, Earthquake Hazards Program, accessed through http://earthquake.usgs.gov/research/hazmaps/ haz101/faq/faq.php, July 16.

USGS (U.S. Geological Survey), 2008b, *Earthquake Hazards 201 – Technical Information, What is Probabilistic Ground Motion?, Uses for the Seismic Hazard Maps*, Earthquake Hazards Program, accessed through http://earthquake.usgs.gov/research/hazmaps/haz101/faq/faq.php, July 16.

USGS (U.S. Geological Survey), 2008c, *FAQ – Measuring Earthquakes, What are the Earthquake Magnitude Classes?, What is Intensity?, What is the Modified Mercalli Intensity Scale?, What is the Difference Between Intensity Scales and Magnitude Scales?, What are the Different Magnitude Scales, and Why are There so Many?*, Earthquake Hazards Program, accessed through http://earthquake.usgs.gov/learning/faq.php?categoryID=2, July 28.

USGS (U.S. Geological Survey), 2008d, *Earthquake Topics – Intensity, Magnitude/Intensity Comparison*, Earthquake Hazards Program, accessed through http://earthquake.usgs.gov/learning/topics.php?topicID=77& topic=Intensity, July 16.

Wald, D.J., V. Quitoriano, T.H. Heaton, and H. Kanamori, 1999, "Relationships Between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California," *Earthquake Spectra*, Vol. 15, No. 3, pp. 557–564, August.

Yuan, Y.C., S.Y. Chen, B.M. Biwer, and D.J. LePoire, 1995, *RISKIND – A Computer Program for Calculating Radiological Consequences and Health Risks from Transportation of Spent Nuclear Fuel*, ANL/EAD-1, Argonne National Laboratory, Argonne, Illinois, November.

Code of Federal Regulations

7 CFR 657.5, Natural Resources Conservation Service, U.S. Department of Agriculture, "Prime and Unique Farmlands: Identification of Important Farmlands."

7 CFR 658.3, Natural Resources Conservation Service, U.S. Department of Agriculture, "Farmland Protection Policy Act: Applicability and Exemptions."

7 CFR 658.7, Natural Resources Conservation Service, U.S. Department of Agriculture, "USDA Assistance with Federal Agencies' Reviews of Policies and Procedures."

33 CFR 328.3, Corps of Engineers, Department of the Army, U.S. Department of Defense, "Definition of Waters of the United States."

40 CFR 50, U.S. Environmental Protection Agency, "National Primary and Secondary Ambient Air Quality Standards."

40 CFR 51, U.S. Environmental Protection Agency, "Requirements for Preparation, Adoption, and Submittal of Implementation Plans," Appendix W, "Guideline on Air Quality Models."

40 CFR 51.165, U.S. Environmental Protection Agency, "Requirements for Preparation, Adoption, and Submittal of Implementation Plans: Permit Requirements."

40 CFR 61, U.S. Environmental Protection Agency, "National Emission Standards for Hazardous Air Pollutants."

40 CFR 81, U.S. Environmental Protection Agency, "Designation of Areas for Air Quality Planning Purposes."

40 CFR 81.313, U.S. Environmental Protection Agency, "Designation of Areas for Air Quality Planning Purposes," Subpart C, Section 107, "Attainment Status Designations: Idaho."

40 CFR 81.348, U.S. Environmental Protection Agency, "Designation of Areas for Air Quality Planning Purposes," Subpart C, Section 107, "Attainment Status Designations: Washington."

United States Code

7 U.S.C. 4201 et seq., Farmland Protection Policy Act of 1981.

16 U.S.C. 470 et seq., National Historic Preservation Act of 1966.

16 U.S.C. 1531 et seq., Endangered Species Act of 1973.

33 U.S.C. 1251 et seq., Clean Water Act of 1972.

42 U.S.C. 300(f) et seq., Safe Drinking Water Act of 1974.

42 U.S.C. 2011 et seq., Atomic Energy Act of 1954.

42 U.S.C. 6901 et seq., Resource Conservation and Recovery Act of 1976.

42 U.S.C. 7401 et seq., Clean Air Act of 1970.

42 U.S.C. 7472 et seq., Prevention of Significant Deterioration of Air Quality: Initial Classifications.

Washington Administrative Code

WAC 173-60, Washington State Department of Ecology, "Maximum Environmental Noise Levels," Olympia, Washington.

WAC 173-303, Washington State Department of Ecology, "Dangerous Waste Regulations," Olympia, Washington.

U.S. Department of Energy Manuals, Orders, and Standards

DOE Order 414.1D, *Quality Assurance*, April 25, 2011.

DOE Order 420.1B, *Facility Safety*, Change 1, April 19, 2010.

DOE Manual 435.1-1, *Radioactive Waste Management Manual*, Change 2, June 8, 2011.

DOE Standard 1020-2002, *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities*, January 2002.

DOE Standard 1023-95, *Natural Phenomena Hazards Assessment Criteria*, April 2002.

APPENDIX G
AIR QUALITY ANALYSIS

> This appendix presents information on the nonradiological air quality impacts that could result from emissions associated with construction, operations, deactivation, and closure activities under the various alternatives described in this *Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*. The impacts of criteria pollutants and toxic air pollutants were assessed by comparing estimated concentrations with ambient standards and Washington State acceptable source impact levels or Idaho State acceptable ambient concentrations for toxic pollutants. Assessed impacts of toxic air pollutant emissions on noninvolved workers are summarized in Chapter 4, and the health risks of toxic chemicals and radionuclides are summarized in Appendix K. Air quality resources and the region of influence are discussed and the impact assessment methods are summarized in Appendix F, Section F.4.

The Clean Air Act authorizes the U.S. Environmental Protection Agency (EPA) to set permissible levels of exposure for selected air pollutants using health-based criteria. These "criteria pollutants" include carbon monoxide, nitrogen dioxide, particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}) and 2.5 micrometers ($PM_{2.5}$), sulfur dioxide, lead, and ozone. The maximum permissible exposure levels for these pollutants are set in the National Ambient Air Quality Standards (NAAQS) (40 CFR 50). The standards focus on short-term exposures (1-hour or 3-hour), workday exposures (8-hour), and long-term exposures (24-hour and annual). The exposures considered vary by pollutant. Primary standards are established to protect against adverse health effects. Secondary standards protect against welfare effects, such as damage to crops, vegetation, and buildings, as well as decreased visibility. Washington State has defined standards for sulfur dioxide and for total suspended particulates. Chapter 3, Section 3.2, of this *Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC & WM EIS)* reflects the most restrictive of the Washington State ambient standards and the NAAQS; Chapter 3, Section 3.3, the most restrictive of the State of Idaho's ambient standards and the NAAQS. Enabling legislation for these regulations is discussed in Chapter 8. U.S. Department of Energy (DOE) activities at the Hanford Site (Hanford) are subject to state air quality permitting requirements, as discussed in Chapter 8. This *TC & WM EIS* evaluates criteria pollutant impacts by comparing concentrations with the most restrictive standards for carbon monoxide, nitrogen dioxide, PM_{10}, $PM_{2.5}$, and sulfur dioxide. Table G–1 presents the applicable ambient air pollutant standards and Washington State acceptable source impact levels with which estimated air pollutant concentrations were compared. Idaho State acceptable ambient concentrations for toxic air pollutants are shown in Table 4–105.

Carbon monoxide, nitrogen dioxide, particulate matter, and sulfur dioxide are produced from the combustion of fossil fuels. Particulate matter is generated by the mechanical disturbance of soil by earthmoving activities, vehicle traffic over unpaved and paved roadways, and the action of the wind on disturbed soils or stockpiles. Lead is not analyzed in this *TC & WM EIS* because the level of emissions is negligible. Ozone is typically formed as a secondary pollutant in the ambient air (troposphere) in the presence of sunlight from the mixing of primary pollutants such as nitrogen oxides and volatile organic compounds (VOCs) that emanate from various mobile (vehicular) and stationary (including natural) sources. Ozone has not been identified as being emitted directly from the facilities evaluated. Although ozone may be regarded as a regional issue, specific ozone precursors, notably nitrogen dioxide and VOCs, were considered. Concentrations of nitrogen dioxide were estimated, as were emissions of VOCs.

Table G–1. Ambient Air Pollutant Standards and Acceptable Source Impact Levels

Pollutant	Averaging Period	Most Stringent Standard[a] (micrograms per cubic meter)	Washington Acceptable Source Impact Level (micrograms per cubic meter)
Criteria Pollutants			
Carbon monoxide	8-hour	10,000[b]	N/A
	1-hour	40,000[b]	N/A
Nitrogen dioxide	Annual	100[c]	N/A
	1-hour	188[d]	N/A
PM_{10}	Annual	50[c]	N/A
	24-hour	150[b]	N/A
$PM_{2.5}$	Annual	15[d]	N/A
	24-hour	35[d]	N/A
Sulfur dioxide	Annual	50[c, e]	N/A
	24-hour	260[c, e]	N/A
	3-hour	1,300[b]	N/A
	1-hour	660[e, f]	N/A
	1-hour	197[d]	N/A
Other Pollutants			
Ammonia	24-hour	N/A	70.8
Benzene	Annual	N/A	0.0345
1,3-Butadiene	Annual	N/A	0.00588
Formaldehyde	Annual	N/A	0.167
Mercury	24-hour	N/A	0.09
Toluene	24-hour	N/A	5,000
Xylene	24-hour	N/A	(g)

[a] The more stringent of the Federal and Washington State standards is presented if both exist for the averaging period. The National Ambient Air Quality Standards (NAAQS) (40 CFR 50), other than those for ozone, particulate matter, lead, and those based on annual averages, are not to be exceeded more than once per year. The 24-hour PM_{10} standard is attained when the standard is not exceeded more than once per year over a 3-year average. The annual arithmetic mean PM_{10} standard is attained when the expected annual arithmetic mean concentration (3-year average) is less than or equal to the standard. The annual $PM_{2.5}$ standard is attained when the 3-year average of the weighted annual mean concentrations does not exceed the standard. The 24-hour $PM_{2.5}$ standard is met when the 98th percentile over 3 years of 24-hour concentrations is less than or equal to the standard value. The 1-hour nitrogen dioxide standard is met when the 3-year average 98th percentile of the daily maximum 1-hour average does not exceed the standard value. The Federal 1-hour sulfur dioxide standard is met when the 3-year average 99th percentile of the daily maximum 1-hour average does not exceed the standard value.

[b] Federal and Washington State standard.

[c] Washington State standard.

[d] Federal standard.

[e] NAAQS and Idaho sulfur dioxide standards are 80 micrograms per cubic meter for the annual average, 365 for the 24-hour average, 1,300 for the 3-hour average, and 197 for the 1-hour average.

[f] Not to be exceeded more than twice in any 7 consecutive days.

[g] Not listed in the recently revised WAC 173-460.

Note: NAAQS also include standards for lead and ozone. No sources of lead emissions have been identified for the alternatives evaluated. Washington State also has ambient standards for fluorides and total suspended particulates (TSP). Concentrations were not compared with the TSP standards because specific emissions for them were not available. Emissions of fluorides were not identified for any of the alternatives.

Key: N/A=not applicable; PM_n=particulate matter with an aerodynamic diameter less than or equal to *n* micrometers.

Source: 40 CFR 50; WAC 173-460, 173-470, 173-474, 173-475, 173-481, and 173-490.

Carcinogens and noncarcinogenic toxic chemicals that would be released from construction and operations activities were evaluated. The toxic air pollutants evaluated included benzene, one of the primary contributors to carcinogenic risk, and ammonia, because of its higher concentration than other tank-vapor source toxic air pollutants, enabling it to serve as an indicator for stationary-source toxic air pollutants. Toluene and xylene were modeled because they are typical of noncarcinogenic toxic air pollutants associated with fuel combustion. Formaldehyde and 1,3-butadiene were modeled to represent carcinogenic toxic air pollutants associated with fuel combustion. Mercury was included because of possible releases from thermal treatment processes. Exposure of members of the public to toxic airborne pollutants was evaluated by comparing maximum concentrations of such pollutants to which the public would be exposed with the Washington State acceptable source impact levels (WAC 173-460). Acceptable source impact levels are used during the permitting process to demonstrate that emissions from a new toxic air pollutant source are sufficiently low to protect human health and safety from potential carcinogenic and other toxic effects.

For noninvolved workers at nearby facilities, the highest annual concentration of each noncarcinogenic chemical was divided by the corresponding inhalation reference concentration to estimate the Hazard Quotient for the released chemical. The Hazard Quotients were summed to give the Hazard Indices for noncarcinogenic chemicals associated with the various phases of each alternative. A Hazard Index of less than 1 indicates that adverse health effects of non-cancer-causing agents are not expected. For carcinogens, the highest annual concentration was multiplied by the unit cancer risk to estimate the increased cancer risk from that chemical. These results are reported under each alternative in Chapter 4.

To estimate the maximum air quality impacts of Hanford tank closure activities, the AERMOD [American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model] air dispersion model (EPA 2004) was used. The model was used to calculate dispersion factors at receptor locations to which the public and noninvolved workers could have access. This model uses a steady state Gaussian plume algorithm to estimate pollutant concentrations from a wide variety of sources associated with industrial complexes. It is applicable to either flat or complex terrain, modeling domains with a radius of 50 kilometers (31 miles) or less from the point of release, and urban or rural environments.

Five years (2000–2004) of hourly meteorological data from the Hanford Meteorological Station (HMS) were used in conducting the AERMOD modeling. Wind and temperature data were obtained from measurements made on the monitoring tower at the HMS, located between the 200-West and 200-East Areas. These data are assumed to be representative because most of the tank closure, Fast Flux Test Facility (FFTF) decommissioning, and waste management activities at Hanford would occur near the 200 Areas and 400 Area. Wind data were obtained from measurements made 9 meters (30 feet) above ground level. Temperature measurements were made at 1.5 meters (5 feet) above ground level. Mixing-depth measurements were made using HMS Doppler acoustic sodar [sonic detection and ranging] data. Surface meteorological data from the Pasco, Washington, National Weather Service Station were used to supplement the HMS data in the preprocessing of meteorological data using the AERMET [American Meteorological Society/U.S. Environmental Protection Agency Regulatory Meteorological Preprocessor] program. Upper-air profiles from the Spokane, Washington, National Weather Service Station were also used.

The AERMOD model uses hourly meteorological data records to compute the maximum dispersion coefficients for various averaging periods and receptor locations. Short-term (1-, 3-, 8-, and 24-hour) dispersion factors were calculated at (1) receptors along the Hanford Reach boundary at points approximately 100 meters (0.062 miles) apart; (2) receptors along publicly accessible portions of State Route 240 at points 0.7 to 1 kilometer (0.43 to 0.62 miles) apart; and (3) additional grids of receptors beyond the boundary, one extending 5 kilometers (3.1 miles) away with points 0.5 kilometers (0.31 miles) apart and the other from 5 to 10 kilometers (3.1 to 6.2 miles) distant with points 1 kilometer (0.6 miles) apart. Annual dispersion factors were calculated at receptors along the Hanford boundary at points approximately 100 meters (0.062 miles) apart and at additional grids of receptors beyond the Hanford boundary, one extending 5 kilometers (3.1 miles) away with points 0.5 kilometers (0.31 miles) apart and the other from 5 to 10 kilometers (3.1 to 6.2 miles) distant with points 1 kilometer (0.6 miles) apart. Modeling receptors for 1- through 24-hour averaging periods are shown in Figure G–1. Receptors for annual modeling are shown in Figure G–2. The receptor locations are accessible to the public and thus are locations at which the public could be exposed to emissions from Hanford tank closure activities.

For the purpose of evaluating air toxic concentrations for the nearest noninvolved workers, three receptors were employed, one in the 200-East Area at the 242-A Evaporator, one at the Environmental Restoration Disposal Facility, and one at the Columbia Generating Station (see Figure G–1). A noninvolved worker is a person working at the site who is incidentally exposed to emissions associated with the Tank Closure, FFTF Decommissioning, or Waste Management alternatives. Both simple and complex terrains were considered in the modeling runs. Elevations at each receptor location were determined from the 10-meter (11-yard) Digital Elevation Models.

In estimating the maximum potential for air quality impacts, emissions from Hanford activities were modeled using a combination of area and point sources. Area sources were defined for the 200-East Area, 200-West Area, the Waste Treatment Plant (WTP) (nonstack emissions) north and south, the 200-West Area Supplemental Treatment Technology Site, Borrow Area C, and the 400 Area (FFTF), as shown in Figures G–1 and G–2. Area source parameters are summarized in Table G–2. One point source was defined for the WTP emissions with the following specifications: a stack height of 10.67 meters (35 feet), an exit temperature of 450 kelvins (350 degrees Fahrenheit), an exit velocity of 19.4 meters (63.7 feet) per second, and stack diameter of 0.3048 meters (1 foot). These parameters were determined using the EPA procedure for determining a representative stack (EPA 1992) and actually represent the steam boiler plant at the WTP. These parameters were used to estimate dispersion coefficients for operation of the WTP and Effluent Treatment Facility. The actual height of the stack from which process pollutants, such as mercury, would be emitted would be higher (61 meters [200 feet]) and is expected to result in lower concentrations off site. A 61-meter (200-foot) stack was used for modeling radioactive emissions (see Appendix K).

Sources that would operate in both the 200-East and 200-West Areas were modeled using a source group referred to as "200EW," while generic sources were assumed to operate in all areas and were referred to as "200EW+."

For the purpose of modeling, a number of conservative assumptions were made that tend to overestimate concentrations from the activities. Operations emissions were averaged over 2,080 hours per year, except for certain sources, for which hours per year were based on operating efficiencies. Construction-related activities, including deactivation and closure activities, were assumed to occur during a 12-hour daytime period. It was also assumed for the purpose of the AERMOD modeling for public and worker receptors that pollutants do not decompose or deposit. In actuality, chemical decomposition and atmospheric deposition processes would act to reduce pollutant concentrations.

The sources of pollutants from tank closure, FFTF decommissioning, and waste management activities include diesel- and gasoline-fueled construction equipment, supplemental treatment processes, operation of WTP melters, grouting operations, employee vehicles, shipping, and any activity capable of generating fugitive dust. The analysis of air pollutant concentrations for the public included emission sources at each activity area, such as construction equipment, processes, operation of facilities, fugitive dust from the activity area, and vehicles operating in the activity area. Emissions from other vehicle operations, such as those on local roads at Hanford, those from operations in the region (e.g., shipping materials to Hanford), and employee vehicles, were in most cases quantified separately and were not included when calculating pollutant concentrations (see Sections G.2.1 and G.2.4).

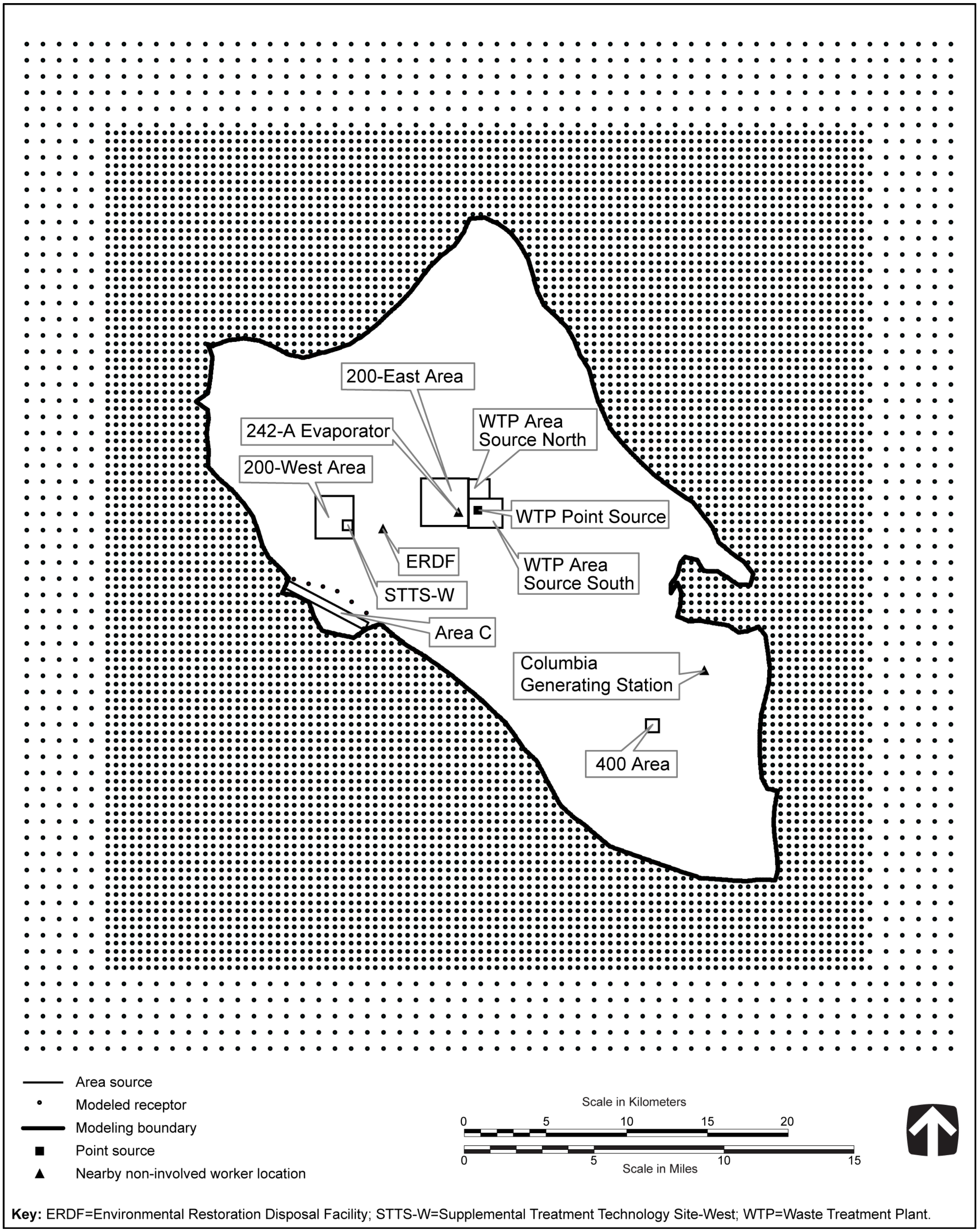

Figure G–1. Nonradiological Air Quality Modeling Receptors and Area Source Locations for 1- to 24-Hour Modeling

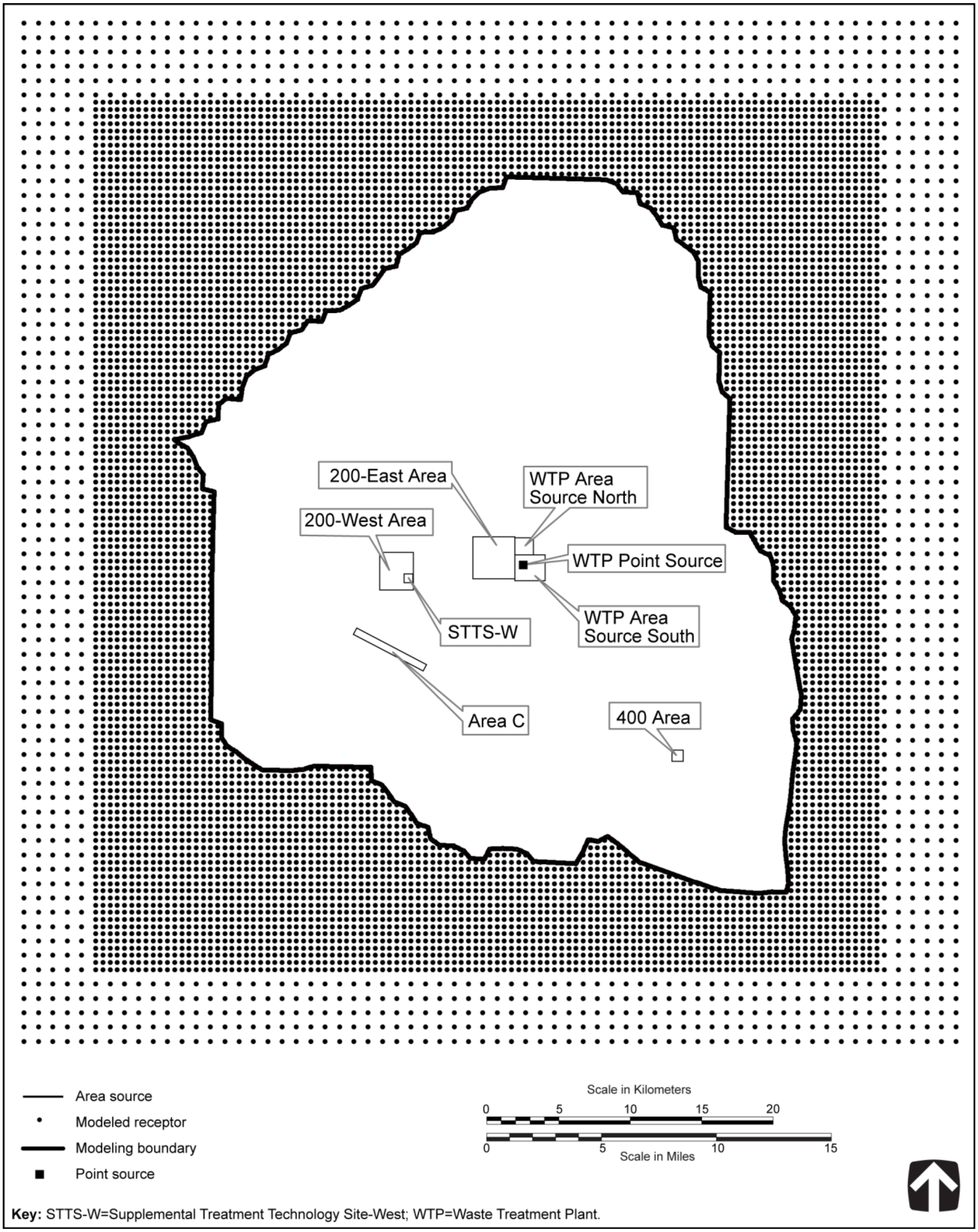

Figure G–2. Nonradiological Air Quality Modeling Receptors and Area Source Locations for Annual Modeling

Table G–2. Area Source Parameters

Source Identifier	Easting[a]	Northing[a]	Base Elevation (meters)	Stack Height (meters)	Easterly Length (meters)	Northerly Length (meters)	Rotation (degrees)	Pit Volume (cubic meters)
WTP_AS_N	307210	5158973	179.83	3	1,291	1,199	0	N/A
WTP_AS_S	307210	5157163	198.12	3	2,092	1,810	0	N/A
200E	304286	5157285	213.36	3	2,930	2,930	0	N/A
200W	297775	5156505	213.36	3	2,340	2,640	0	N/A
SUPW	299471	5157033	210.01	3	600	600	0	N/A
Area C	300792	5150871	173.74	3	500	5,500	–62.25[b]	11,430,000
400 Area	318150	5144557	167.64	3	804	804	0	N/A

[a] Data represent the locations of the southwest corners of the area sources expressed in UTM [Universal Transverse Mercator] coordinates (NAD [North American Datum] 27, Zone 11).

[b] Indicates 62.25-degree counterclockwise rotation around the southwest corner of the area.

Note: To convert cubic meters to cubic yards, multiply by 1.308; meters to feet, by 3.281.

Key: 200E=200-East Area; 200W=200-West Area; N/A=not applicable; SUPW=200-West Area Supplemental Treatment Technology Site; WTP_AS_N=Waste Treatment Plant area source north; WTP_AS_S=Waste Treatment Plant area source south.

For the construction activities at Idaho National Laboratory (INL) under FFTF Decommissioning Alternatives 2 and 3, dispersion factors were calculated using the EPA SCREEN3 model, a unit emission rate, a 32,375-square-meter (38,721-square-yard [8-acre]) area source, and a release height of 3 meters (9.8 feet). The model was employed to estimate the maximum dispersion factor at or beyond the site boundary. The maximum dispersion factor was found to occur at the site boundary 5,240 meters (17,200 feet) from the Materials and Fuels Complex (MFC).

For the ecological risk assessment, atmospheric dispersion analysis was performed at ecological receptor locations to support estimation of peak concentrations of potentially hazardous constituents due to normal releases from tank waste retrieval and processing and tank closure, FFTF decommissioning, and waste management activities. Environmental media considered in the ecological risk assessment included air, soil, and Columbia River surface water. Steps in the analysis included characterization of sources, identification of receptor locations, and estimation of atmospheric concentrations and deposition rates for these locations. Releases were represented as four ground-level sources (one each in the center of the 200-East and 200-West Areas, one at the 400 Area, and one in Borrow Area C) and an elevated source at the WTP in the 200-East Area. Emission rates were estimated using data packages developed for each alternative (see Section G.2). Receptors were placed at onsite and Columbia River nearshore locations. Onsite receptors were selected for all 16 compass bearings; Columbia River nearshore receptors were selected only at points along compass bearings that bisect the river. The number of Columbia River nearshore receptors varied with the source area—from 8 for Borrow Area C up to 11 for the 200-East Area and WTP area. The ecological risk assessment is presented in Chapter 5, Sections 5.1.3, 5.2.3, and 5.3.3, and Appendix P.

The atmospheric dispersion analysis was conducted with the XOQDOQ [relative atmospheric dispersion and deposition factor computer program] model developed at Pacific Northwest Laboratory (Sagendorf, Goll, and Sandusky 1982). This Gaussian-plume-type model was used to calculate annual average dispersion and deposition conditions using a joint frequency distribution for the categories of velocity, stability class, and direction. For the 200-East Area, 200-West Area, and Borrow Area C ground-level source areas, the meteorological conditions used were the 10-year-average (1997–2006) values reported for the 200 Area HMS at the 9-meter (30-foot) level. For the WTP elevated source area, 10-year values from the 200 Area HMS at the 61-meter (200-foot) level were used. For the FFTF ground-level source area, 10-year values from the 400 Area meteorological tower at the 9-meter (30-foot) level were used (Burk 2007). The highest dispersion and deposition conditions were recorded for each of the defined source areas, regardless of compass direction. As a conservative approach, the sum of the products of the highest recorded dispersion and deposition conditions determined by the XOQDOQ model and the estimated emission rates for each of the source areas were taken to represent atmospheric concentration and deposition rates. Concentrations in soil were estimated assuming mixing into the upper 1 centimeter (0.4 inches) of soil over the period of operation under each alternative for the calculated deposition rate. Concentrations in surface water were estimated by dividing the annual deposition rate onto the area of affected surface water by the annual flow rate of surface water. Two surface-water environments were considered—a Columbia River nearshore low-flow region and a river average condition (see Appendix P).

G.1 DISPERSION FACTORS

AERMOD modeling runs for the various areas at Hanford were conducted to calculate, for each source or source group and a specified unit emission rate, a dispersion factor for the locations of maximum air quality impact on the public for various averaging periods. Presented as Table G–3 are the unit dispersion factors for the various locations. Multiplying the unit dispersion factor (seconds per cubic meter) by a maximum pollutant emission rate (micrograms per second) generates an estimate of the maximum air pollutant concentration, which is presented in micrograms per cubic meter as shown in the following equation.

$$C_{max} = E_{max} \times DF \times 1/H \times 1 \text{ hour}/3{,}600 \text{ second} \times 10^{12} \text{ micrograms}/1 \text{ metric ton}$$

where:

C_{max} = maximum air pollutant concentration contribution from the activity (micrograms per cubic meter)

E_{max} = maximum pollutant emission rate (metric tons per year)

DF = unit dispersion factor appropriate to the pollutant averaging time, source location, and duration of the activity (seconds per cubic meter)

H = hours of operation per year

For example, under Tank Closure Alternative 2B WTP operation for the carbon monoxide 8-hour averaging period, calculation of C_{max} involves the following values:

E_{max} = 2.36×10^{2} metric tons per year

DF = 7.74×10^{-6} seconds per cubic meter (24-hour-per-day activity, at WTP_PS, for the 8-hour averaging period)

H = 6,250 hours operation per year (see Section G.2.2)

Thus, the value of C_{max} (the 8-hour carbon monoxide concentration) is 81.1 micrograms per cubic meter.

The emission rate for an activity can be estimated by dividing the annual emission rate (see Section G.2) by the hours of operation per year (see Sections G.2.1 and G.2.2). For criteria and toxic pollutants, the maximum air quality impacts of emissions from the 200 Areas would occur at points of public access along State Route 240 and at the site boundary to the east, southeast, south, southwest, northwest, and west.

Table G–3. Locations and Corresponding Dispersion Factors for Maximum Air Quality Impacts at the Hanford Site

Averaging Time	24-Hour-per-Day Activity: Maximum-Impact Location	24-Hour-per-Day Activity: Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)	12-Hour-per-Day Activity: Maximum-Impact Location	12-Hour-per-Day Activity: Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)
200-East Area Emissions – Area Source (200E)				
1-hour	1,000 meters southwest of boundary	6.22×10^{-5}	1,000 meters southwest of boundary	5.91×10^{-5}
3-hour	Northwest boundary	2.17×10^{-5}	1,000 meters southwest of boundary	2.11×10^{-5}
8-hour	West-southwest at State Route 240	1.33×10^{-5}	1,000 meters southwest of boundary	9.14×10^{-6}
24-hour	3,000 meters south of State Route 240	5.41×10^{-6}	Southwest site boundary	3.98×10^{-6}
Annual	Southeast site boundary	1.01×10^{-7}	1,000 meters southeast of boundary	4.00×10^{-8}
200-West Area Emissions – Area Source (200W)				
1-hour	1,000 meters southwest of boundary	9.67×10^{-5}	2,000 meters south at boundary	9.02×10^{-5}
3-hour	Southwest at State Route 240	4.1×10^{-5}	South at State Route 240	3.47×10^{-5}
8-hour	West at State Route 240	2.65×10^{-5}	Southwest at State Route 240	1.65×10^{-5}
24-hour	South at State Route 240	1.28×10^{-5}	Southwest at State Route 240	7.06×10^{-6}
Annual	South site boundary	9.21×10^{-8}	3,900 meters northwest of boundary	5.00×10^{-8}
200-East Area Emissions – Area Source for Waste Treatment Plant Construction and Deactivation (WTP_AS)				
1-hour	1,500 meters south of State Route 240	1.78×10^{-4}	South at State Route 240	1.69×10^{-4}
3-hour	North boundary	6.09×10^{-5}	South at State Route 240	5.62×10^{-5}
8-hour	Southwest at State Route 240	2.91×10^{-5}	South at State Route 240	2.38×10^{-5}
24-hour	1,500 meters south of State Route 240	1.63×10^{-5}	1,500 meters south at State Route 240	9.64×10^{-6}
Annual	1,000 meters south of east site boundary	2.67×10^{-7}	1,500 meters east of east site boundary	9.00×10^{-8}
200 Area Emissions – Point Source for Waste Treatment Plant Operations (WTP_PS)				
1-hour	3,000 meters south of State Route 240	2.52×10^{-5}	3,000 meters southwest of boundary	2.35×10^{-5}
3-hour	3,000 meters south at State Route 240	1.55×10^{-5}	3,000 meters south at State Route 240	1.06×10^{-5}
8-hour	3,000 meters south of south boundary	7.74×10^{-6}	3,400 meters east of boundary	3.95×10^{-6}
24-hour	3,000 meters south of boundary	2.58×10^{-6}	3,000 meters south of boundary	1.67×10^{-6}
Annual	East site boundary	1.20×10^{-7}	3,000 meters east of boundary	3.13×10^{-8}

Table G–3. Locations and Corresponding Dispersion Factors for Maximum Air Quality Impacts at the Hanford Site *(continued)*

Averaging Time	24-Hour-per-Day Activity: Maximum-Impact Location	24-Hour-per-Day Activity: Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)	12-Hour-per-Day Activity: Maximum-Impact Location	12-Hour-per-Day Activity: Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)
200-West Area Supplemental Treatment Facility – Area Source (SUPW)				
1-hour	West boundary	3.14×10^{-4}	South at State Route 240	3.14×10^{-4}
3-hour	South at State Route 240	1.13×10^{-4}	2,000 meters south at boundary	1.05×10^{-4}
8-hour	Southwest at State Route 240	5.24×10^{-5}	South at State Route 240	4.49×10^{-5}
24-hour	South boundary	2.41×10^{-5}	Southwest at State Route 240	1.87×10^{-5}
Annual	Northwest boundary	1.7×10^{-7}	3,700 meters northwest of boundary	8.00×10^{-8}
Source Group 200-East and 200-West Area Emissions – Area Source (200EW)[b]				
1-hour	2,000 meters west of west boundary	1.33×10^{-4}	2,000 meters west of boundary	1.22×10^{-4}
3-hour	West boundary	5.08×10^{-5}	West boundary	4.13×10^{-5}
8-hour	Southwest at State Route 240	3.47×10^{-5}	2,200 meters west at State Route 240	1.95×10^{-5}
24-hour	South at State Route 240	1.49×10^{-5}	South at State Route 240	8.43×10^{-6}
Annual	Northwest boundary	1.68×10^{-7}	3,700 meters northwest of boundary	6.00×10^{-8}
Source Group 200-East, 200-West, and Waste Treatment Plant Area Emissions – Area Source (200EW+)[c]				
1-hour	West boundary	2.03×10^{-4}	West boundary	1.86×10^{-4}
3-hour	South at State Route 240	8.1×10^{-5}	South at State Route 240	6.78×10^{-5}
8-hour	1,500 meters south at State Route 240	5.26×10^{-5}	West boundary	3.11×10^{-5}
24-hour	South at State Route 240	2.55×10^{-5}	South at State Route 240	1.21×10^{-5}
Annual	1,000 meters at southeast site boundary	3.84×10^{-7}	1,000 meters at southeast site boundary	1.40×10^{-7}
Source Group Area C – Area Source (Area C)				
1-hour	South at boundary	4.75×10^{-4}	South at boundary	4.38×10^{-4}
3-hour	South at boundary	2.35×10^{-4}	South at boundary	1.53×10^{-4}
8-hour	South at boundary	1.13×10^{-4}	South at boundary	6.74×10^{-5}
24-hour	South at boundary	4.15×10^{-5}	South at boundary	2.58×10^{-5}
Annual	Southeast at State Route 240	2.00×10^{-7}	Southeast at State Route 240	7.00×10^{-8}

Table G–3. Locations and Corresponding Dispersion Factors for Maximum Air Quality Impacts at the Hanford Site *(continued)*

Averaging Time	24-Hour-per-Day Activity		12-Hour-per-Day Activity	
	Maximum-Impact Location	Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)	Maximum-Impact Location	Unit Dispersion Factor for Maximum-Impact Location[a] (s/m^3)
Source Group 400 Area – Area Source (400)				
1-hour	800 meters southwest of south boundary	2.27×10^{-4}	800 meters west of boundary	2.09×10^{-4}
3-hour	East at boundary	8.07×10^{-5}	800 meters west of boundary	6.98×10^{-5}
8-hour	700 meters at southwest boundary	3.78×10^{-5}	West boundary	2.91×10^{-5}
24-hour	South at boundary	1.72×10^{-5}	South at boundary	1.14×10^{-5}
Annual	1,000 meters at southeast boundary	4.77×10^{-7}	Southeast boundary	1.70×10^{-7}

a Values were computed using the AERMOD model. The emission rate for an activity can be estimated by dividing the annual emission rate (see Section G.2) by the hours of operation per year (see Sections G.2.1 and G.2.2). To convert to a concentration estimate (micrograms per cubic meter), the unit dispersion factor (seconds per cubic meter) is multiplied by the actual pollutant release rate (micrograms per second).

b Source Group 200EW includes certain activities occurring at both the 200-East and 200-West Areas.

c Source Group 200EW+ includes certain generic activities assumed to occur at the 200-East and 200-West Areas and the Waste Treatment Plant area.

Note: To convert meters to feet, multiply by 3.281.

Key: s/m^3=seconds per cubic meter.

The dispersion factors for construction at the MFC at INL are shown in Table G–4 for a receptor at the site boundary.

The dispersion factors for the maximally exposed noninvolved onsite worker from sources in each source group are reflected in Table G–5.

Table G–4. Dispersion Factors for Maximum Air Quality Impacts of Construction at the Idaho National Laboratory Materials and Fuels Complex

Averaging Time	Dispersion Factor (seconds per cubic meter)[a]
1-hour	5.65×10^{-5}
3-hour	5.08×10^{-5}
8-hour	3.95×10^{-5}
24-hour	2.26×10^{-5}
Annual	4.52×10^{-6}

a Estimates for 3-hour through annual averaging periods were derived based on the 1-hour dispersion factor, using factors provided by the U.S. Environmental Protection Agency for screening analyses (EPA 1992).

Table G–5. Annual Dispersion Factors for Maximally Exposed Noninvolved Workers on the Hanford Site

Source Location/Source Group	24-Hour-per-Day Activity	12-Hour-per-Day Activity
	(seconds per cubic meter)	
200E	7.09×10^{-6}	2.22×10^{-6}
200W	4.06×10^{-6}	1.1×10^{-6}
WTP_AS	1.90×10^{-6}	9.37×10^{-7}
WTP_PS	2.79×10^{-7}	1.77×10^{-7}
SUPW	9.23×10^{-6}	2.08×10^{-6}
200EW	7.37×10^{-6}	2.27×10^{-6}
200EW+	9.17×10^{-6}	3.17×10^{-6}
Area C	1.06×10^{-7}	2.88×10^{-8}
400 Area	3.42×10^{-7}	1.45×10^{-7}

Note: Values were computed using the AERMOD model. To convert to a concentration estimate (micrograms per cubic meter), the unit dispersion factor (seconds per cubic meter) is multiplied by the actual pollutant release rate (micrograms per second).

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

G.2 EMISSIONS

Emission estimates are based on data reports prepared for this *TC & WM EIS*, and their scaling is based on the activities to be performed under each of the alternatives evaluated in this environmental impact statement (EIS) (SAIC 2010a, 2010b, 2010c). The data sets provide information on the source of emission factors used in making the emission estimates. This information is summarized below and in Table G–6. Emissions that would be associated with long-term tank farm administrative control are based on recent tank farm emissions, as summarized in Table G–7. Emissions for employee vehicles are presented in Table G–8. The schedules of various activities evaluated for each alternative are presented in Chapter 2, Section 2.5, of this EIS. Provided in Tables G–9 through G–62 are the estimates of criteria and toxic pollutant emissions under each alternative by general type of activity: construction, operations, deactivation, decommissioning, and closure. These emissions include sources at the construction site, including construction equipment, or operations area and, in most cases, do not include emissions from local or regional vehicular activity that results from shipping of materials or emissions from employee vehicles (see Section G.2.4). The same emission factors were used for both mobile and stationary fuel-burning sources, except employee vehicles. Emissions of potential stratospheric ozone–depleting compounds such as chlorofluorocarbons were not evaluated, as no emissions of these pollutants were identified in the data reports.

Table G–6. Representative Nonradioactive Air Pollutant Emission Factors

Pollutant	Factor	Unit[a]	Source
Fuel Burning – Gasoline Fuel-Fired[b]			
Carbon monoxide	2.7×10^{4} (62.7)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Nitrogen dioxide	7.01×10^{2} (1.63)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Particulate matter (PM_{10})	4.3×10^{1} (0.1)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Sulfur dioxide	3.61×10^{1} (0.084)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Carbon dioxide	6.62×10^{4} (154)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Ammonia	7.55×10^{1} ($6.3\times10^{-1)}$)	Grams per kiloliter burned (pounds per 1,000 gallons burned)	EPA 2005
Benzene	1.55×10^{-2} (5.51×10^{-5})	Grams per kilometer traveled (pounds per vehicle-mile traveled)	EPA 2005
Toluene	2.38×10^{-1} (8.46×10^{-4})	Grams per kilometer traveled (pounds per vehicle-mile traveled)	EPA 2005
Xylene	6.74×10^{-2} (2.39×10^{-4})	Grams per kilometer traveled (pounds per vehicle-mile traveled)	EPA 2005
1,3-Butadiene	8.71×10^{-5} (3.09×10^{-7})	Grams per kilometer traveled (pounds per vehicle-mile traveled)	EPA 2005
Formaldehyde	5.24×10^{-3} (1.86×10^{-5})	Grams per kilometer traveled (pounds per vehicle-mile traveled)	EPA 2005
Total organic compounds	1.30×10^{3} (3.03)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Fuel Burning – Diesel Fuel-Fired[b]			
Carbon monoxide	4.09×10^{2} (0.95)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Nitrogen dioxide	1.9×10^{3} (4.41)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Particulate matter (PM_{10})	1.33×10^{2} (0.31)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Sulfur dioxide[c]	6.54×10^{-1} (1.5×10^{-3})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Carbon dioxide	7.05×10^{4} (164)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Ammonia	1.14×10^{2} (9.5×10^{-1})	Grams per kiloliter burned (pounds per 1,000 gallons burned)	EPA 2005
Benzene	4.01×10^{-1} (9.33×10^{-4})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-2
1,3-Butadiene	1.68×10^{-2} (3.9×10^{-5})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-2

Table G–6. Representative Nonradioactive Air Pollutant Emission Factors *(continued)*

Pollutant	Factor	Unit[a]	Source
Fuel Burning – Diesel Fuel-Fired[b] *(continued)*			
Formaldehyde	5.07×10^{-1} (1.18×10^{-3})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-2
Toluene	1.76×10^{-1} (4.09×10^{-4})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-2
Xylene	1.22×10^{-1} (2.85×10^{-4})	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-2
Total organic compounds	1.55×10^{2} (0.36)	Nanograms per joule (pounds per million Btu)	EPA 1995:Table 3.3-1
Construction			
Particulate matter (total suspended particulates)	2.69 (1.2)	Metric tons per hectare per month (tons per acre per month)	EPA 1995:Section 13.2.3.3
Road Travel			
Particulate matter (PM_{10}) – paved	235 (0.83)	Grams per kilometer (pounds per mile)	Slaathaug 1995:Appendix F
Particulate matter (PM_{10}) – unpaved	659 (2.34)	Grams per kilometer (pounds per mile)	Slaathaug 1995:Appendix F
Glass Manufacture (Surrogate for Waste Treatment Plant Melter and Bulk Vitrification)			
Carbon monoxide	9.98×10^{1} (0.22)	Grams per metric ton of glass (pounds per metric ton of glass [with low-energy scrubber])	EPA 1995:Table 11.15-1, 5
Nitrogen dioxide	3.1×10^{3} (6.83)	Grams per metric ton of glass (pounds per metric ton of glass [with low-energy scrubber])	EPA 1995:Table 11.15-1, 4
Particulate matter (PM_{10})	3.5×10^{2} (0.772)	Grams per metric ton of glass (pounds per metric ton of glass [with low-energy scrubber])	EPA 1995:Table 11.15-1, 2
Sulfur dioxide	8.48×10^{2} (1.87)	Grams per metric ton of glass (pounds per metric ton of glass [with low-energy scrubber])	EPA 1995:Table 11.15-1, 3
Concrete Batching (Surrogate for Cast Stone and Sulfate Removal)			
Particulate matter (PM_{10})	8.31 (0.014)	Grams per cubic meter produced (pounds per cubic yard [controlled with truck mix loading])	EPA 1995:Table 11.12-3
Flash Calcination and THOR Data (for Steam Reforming)			
Carbon monoxide	0.0893 (0.0893)	Kilograms per kilogram processed (tons per ton processed)	CEES 2006a: Attachment 3:9
Nitrogen dioxide	0.0253 (0.0253)	Kilograms per kilogram processed (tons per ton processed)	CEES 2006a, Attachment 3:9

Table G–6. Representative Nonradioactive Air Pollutant Emission Factors *(continued)*

Pollutant	Factor	Unit[a]	Source
Flash Calcination and THOR Data (for Steam Reforming) *(continued)*			
Particulate matter (PM_{10})	0.017 (0.034)	Kilograms per megagram processed (pounds per ton [flash calciner with fabric filter])	EPA 1995:Table 11.16-2
Carbon dioxide	0.678 (0.678)	Kilograms per kilogram processed (tons per ton processed)	CEES 2006a: Attachment 3:9

[a] Fuel-use data are discussed in Appendix E.
[b] The same emission factors were used for construction equipment, mobile equipment, and stationary fuel-burning sources, except employee vehicles, for which factors are provided in Section G.2.4 below.
[c] Percent sulfur in diesel fuel was adjusted to 0.0015 percent from 0.3 percent to reflect the current sulfur content of fuel.
Key: Btu=British thermal unit; THOR=THOR Treatment Technologies, LLC; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; tons=short tons.

Table G–7. Nonradioactive Air Emissions from the 200 Area Tank Farms at the Hanford Site

	Emissions (metric tons per year)			
	Calendar Year 2001		Calendar Year 2002	
Pollutant	200-East Area	200-West Area	200-East Area	200-West Area
Carbon monoxide	10	3.6	10	3.6
Nitrogen dioxide	6.4	9.1	0.18	0.27
Particulate matter	(a)	(a)	(a)	(a)
Sulfur dioxide[b]	0	0	0	0
Volatile organic compounds[c]	3.2	1.8	3.6	1.8
Ammonia	6.4	5.4	6.4	5.4
Other toxic air pollutants[d]	1.8	0.64	1.8	0.64

[a] Particulate matter emissions were not reported.
[b] Sulfur dioxide emissions were reported as zero.
[c] Volatile organic compounds emitted from tank and tank ventilation systems include, but are not limited to, acetaldehyde, acetonitrile, benzene, cyclohexane, methyl-cyclohexane, ethanol, heptane, hexane, octane, and propane (DOE 2003).
[d] Other toxic air pollutants emitted from tank and tank ventilation systems include, but are not limited to, 1,3-butadiene, 1,4-dioxane, acetaldehyde, acetonitrile, benzene, formaldehyde, hexane, methanol, and nitrous oxide (DOE 2003).
Note: Emissions represent 177 tanks in the 200-East and 200-West Areas.
Source: Fluor Hanford 2002, 2003.

Emission rates were calculated for each activity or facility, compiled, and processed for use in the analysis. Specific assumptions for each alternative are documented in the project calculation data sheets and in the scaled workbooks for each alternative. Emission rates for each facility were determined by summing the emission rates for various sources related to that facility and phase of activity.

Numerous nonradioactive toxic air pollutants could be present in emissions from construction equipment, other fuel-burning sources, and process sources. These include constituents such as benzene, toluene, xylene, propylene, formaldehyde, acetaldehyde, acrolein, and trace metals. Fuel-burning sources emit various organic compounds that may be listed as total organic compounds or VOCs, the latter category excluding the semivolatile and condensable organic compounds such as methane (EPA 1995). Typically, however, only a few substances account for most of the risk. DOE selected for detailed analysis seven toxic constituents—benzene, toluene, xylene, ammonia, 1,3-butadiene, formaldehyde, and mercury—that are both representative contributors to risk from fuel-burning and process sources and constituents for which there was a Washington State acceptable source impact level. On the basis of a comparison of fuel use for each activity, DOE limited the number of activities for which detailed emissions and pollutant concentrations were calculated. Ammonia was also selected for modeling because its concentration is higher than that of other toxic constituents in tank vapor spaces. This, combined with ammonia's toxicity, made it a good choice as an indicator constituent that would bound the analysis; that is, if ammonia were not found to be in excess of the acceptable source impact level, then the same could be inferred for other toxic air pollutants. Mercury was evaluated to address potential emissions from the tank waste treatment process. Also evaluated were emissions of carbon monoxide, nitrogen oxides, and ammonia from routine tank farm operations.

G.2.1 Construction Emissions

Included in calculations of overall onsite nonradioactive emissions were fuel use and fugitive dust emissions related to construction activities. Mobile vehicle emissions related to the delivery of equipment and supplies to the site were calculated separately in connection with construction of major facilities (see Tables G–63 through G–112). These mobile vehicle emission calculations represent local and regional vehicular emissions; some are included in the onsite activity emission calculations in the facility emission tables (Tables G–9 through G–62). Other mobile emissions that occur at the activity areas, such as those from construction equipment, are also included in the facility emission tables. The same emission factors were used for both mobile and stationary fuel-burning sources, except employee vehicles (see Section G.2.4). Many of the closure activities are also construction-type activities, and thus emissions were also calculated by the methods used for construction-related emissions.

The emissions related to fuel use were calculated by multiplying the quantity of diesel and gasoline fuel by emission factors derived from the EPA compilation of air pollutant emission factors for stationary point and area sources (EPA 1995) and from other EPA sources. These emission factors are summarized in Table G–6.

The sulfur dioxide emission factor for diesel fuel–burning sources was adjusted from the factor provided by EPA (EPA 1995), which is based on 0.3 percent (3,000 parts per million) sulfur in fuel, to a factor based on the current, more restrictive limit of 0.0015 percent (15 parts per million). No adjustment was made in the emission rates for nitrogen dioxide and particulate matter based on the more restrictive truck emission standards for these air pollutants that became effective beginning in 2007.

For the purpose of this analysis, emissions of PM_{10} and $PM_{2.5}$ from activities were assumed to be the same. Therefore, the concentrations estimated would also be the same, and $PM_{2.5}$ concentrations are not shown separately.

Fugitive dust emissions were calculated from an emission factor (EPA 1995) for general construction activity, which gives an estimate of emissions in metric tons per month per hectares disturbed. This factor is very conservative in that it overestimates fugitive dust emissions from general construction activity on a site, but it is useful for estimating emissions when more-detailed information on a construction activity is not available. Moreover, because the factor is for total suspended particulates, rather than PM_{10}, it results in an overestimate of fugitive emissions of PM_{10} by a factor of about 2.5. This emission factor was used with the total duration and the total area of land disturbance for each construction activity, and the emission calculations for construction assumed no application of controls to reduce emissions. Many of the construction-type activities that have large emissions of particulate matter occur over large areas. Because it is unlikely that the total area would be actively disturbed by equipment and exposed to wind erosion at any one time, the emissions of particulate matter have likely been overestimated. For example, the modified Resource Conservation and Recovery Act (RCRA) Subtitle C barrier would be constructed over an 84.2-hectare (208-acre) area over a period of 7 years. It is likely that only a fraction of this area would be actively under construction at any one time, resulting in much-smaller emissions than estimated.

The onsite travel emission calculations were based in part on an estimate of fuel use developed from the number of loads and mileage. The fuel use emission factors were the same as those used in operations emissions calculations. Calculations of road dust emissions were based on assumptions of the portions of travel on unpaved and paved roads. The emission calculations for travel also assumed no application of controls to reduce emissions.

Construction, deactivation, and closure activities would be conducted using appropriate dust suppression techniques compliant with Washington State emission control requirements. Dust control measures could include using soil binders and watering, applying rock to or paving roads, covering loads on trucks used for moving rocks and soil, controlling speeds on roads, and halting earthmoving and other activities when windspeed is projected to exceed the threshold for substantial dust generation. These measures were not considered in the emission estimates used in the modeling of these activities. Therefore, the concentrations estimated for these activities are higher than would likely occur.

For the purpose of modeling, construction emissions were averaged over 2,080 hours per year.

G.2.2 Operations Emissions

Two contributors to overall nonradioactive operations emissions were calculated: fuel use (for diesel generators and boilers, for example) and process emissions. Vehicular emissions related to the transport of equipment and supplies to the site were calculated separately for the major facilities, as reflected in Tables G–63 through G–112. These emission calculations represent local and regional vehicular emissions; some are included in the onsite activity emission calculations in the facility emission tables (Tables G–9 through G–62). Other mobile emissions that occur at the activity areas, such as those from construction equipment, are also included in the facility emission tables. Calculations of operations emissions related to fuel use and travel were performed in the same manner as those for construction, except for employee vehicles (see Section G.2.4).

For treatment operations such as those at the WTP, Sulfate Removal Facility, Bulk Vitrification Facilities, and Cast Stone Facilities, a surrogate manufacturing process was identified. For the WTP, for example, glass manufacturing was identified as a surrogate process, and, as shown in Table G–6, EPA air pollutant emission factors (EPA 1995) were used. The use of surrogate processes introduces some uncertainty to the calculations. For example, the glass-manufacturing emission factor was for soda lime glass rather than for the borosilicate glass that would be produced at the WTP. This should have minimal effect on the emission estimates, however, as most of the constituents of potential concern are not substantially affected by the chemical composition of the glass.

For analysis purposes it was assumed that the entire mercury inventory would be released to the air through the stacks from the WTP, bulk vitrification, and steam reforming processes (CEES 2006b:Attachment 4:A4-2; 2006c:Attachment 4:A4-2; 2007:Attachment 4:A4-2).

Control technologies were applied to the process emissions for each constituent of potential concern. Credit for only one control technology was taken for each constituent. With respect to operations, control technologies were applied to fuel-burning sources for the treatment and supplemental treatment technologies.

Deactivation emissions were calculated assuming 10 percent of the annual emission rates during operations. Although only a small percentage of the facility inventory would remain at the end of operations (e.g., 1 percent for the WTP), cleanout of systems during deactivation would involve operation in off-normal modes, increasing the potential for discharge, so the more conservative 10 percent was assumed.

For the purpose of modeling, operations emissions were averaged over 2,080 hours per year except for certain sources, for which hours per year were based on operating efficiencies. Operating hours per year assumed for these sources are as follows: 6,250 for the WTP, Immobilized Low-Activity Waste Interim Storage Facilities, Cesium and Strontium Capsule Processing Facility, and Preprocessing Facility; 5,260 for the Bulk Vitrification and Cast Stone Facilities; 6,132 for the Sulfate Removal Facility; 4,380 for the Transuranic Waste Interim Storage Facility; and 7,300 for the High-Level Radioactive Waste Debris Storage Facility. Emissions from routine operations, the Effluent Treatment Facility, and steam reforming were averaged over 8,760 hours per year. Almost all activities associated with the FFTF Decommissioning alternatives were averaged over 2,080 hours per year; the exceptions, which are associated with the Hanford Sodium Reaction Facility and INL Sodium Processing Facility, were averaged over 8,760 hours per year. Waste management activities were averaged over 2,080 hours per year.

G.2.3 Tank Emissions

Nonradioactive air emissions from the 200-East and 200-West Area tank farms, shown in Table G–7 for calendar years (CYs) 2001 and 2002, were used as the basis for calculating tank farm emissions from the routine operations and administrative control activities (Fluor Hanford 2002, 2003).

G.2.4 Employee Vehicle Emissions

In addition to vehicle emissions from trucks moving materials and equipment to and on the site during various phases of activity, employee vehicles making daily commuter trips to the site would contribute to air pollutant emissions in the Hanford region. Emissions from employee vehicles under each alternative's peak activity period were estimated using an estimate of average vehicle emission rates calculated with EPA's MOBILE6 vehicle emission model (EPA 2003) and the peak-year vehicle trips presented in the socioeconomics sections of Chapter 4. These emissions were not included when calculating pollutant concentrations, but are discussed here for information purposes. Emission rates were calculated for carbon monoxide, VOCs, particulate matter, and nitrogen oxides on the basis of a vehicle mix for CY 2007. Emissions are presented by alternative in Table G–8. Vehicle emission rates over the periods of the alternatives considered are expected to decrease as vehicles become more efficient, emissions are better controlled, and possibly other vehicle technologies are implemented.

Peak-year emissions from employee vehicles under the various Tank Closure alternatives would range from 343 to 2,010 metric tons per year of carbon monoxide, respectively, under Tank Closure Alternative 1 and Alternatives 6A and 6B, Option Cases, and from 41.5 to 244 metric tons per year of nitrogen oxides, respectively, under those same alternatives. These emissions represent between 0.3 and 2 percent of the total CY 2002 four-county, on-road vehicle emissions in Benton, Franklin, Adams, and Grant Counties (EPA 2007).

Peak-year emissions from employee vehicles under the FFTF Decommissioning alternatives would range from 0.25 to 16.8 metric tons per year of carbon monoxide, respectively, under FFTF Decommissioning Alternatives l and 3 (facility disposition) and from 0.03 to 2.04 metric tons per year of nitrogen dioxide, respectively, under those same alternatives. These emissions represent less than 0.02 percent of the total CY 2002 four-county, on-road vehicle emissions in Benton, Franklin, Adams, and Grant counties. Peak-year emissions under Waste Management alternatives would range from 21.8 to 89 metric tons per year of carbon monoxide and from 2.6 to 10.8 metric tons per year of nitrogen dioxide. The highest emissions would occur under Waste Management Alternative 2, Disposal Groups 2 and 3, and would be less than 1 percent of the total CY 2002 four-county, on-road vehicle emissions in Benton, Franklin, Adams, and Grant counties (EPA 2007).

Table G–8. Peak-Year Employee Vehicle Emissions by Alternative

Alternative	Period	Total Vehicles	Kilometers Traveled	Emissions (metric tons per year)				
				VOCs	Carbon Monoxide	Nitrogen Dioxide	$PM_{2.5}$	PM_{10}
Tank Closure (TC)								
TC Alternative 1	2008	1,387	36,700,000	25.4	343.0	41.5	0.8	1.2
TC Alternative 2A	2078–2079	3,935	104,000,000	72.1	973.0	118.0	2.3	3.3
TC Alternative 2B	2040	5,489	145,000,000	101.0	1,360.0	164.0	3.1	4.7
TC Alternative 3A	2035	4,266	113,000,000	78.2	1,050.0	128.0	2.4	3.6
TC Alternative 3B	2035	4,206	111,000,000	77.1	1,040.0	126.0	2.4	3.6
TC Alternative 3C	2035	4,368	116,000,000	80.0	1,080.0	131.0	2.5	3.7
TC Alternative 4	2019	6,398	169,000,000	117.0	1,580.0	192.0	3.7	5.4
TC Alternative 5	2029–2032	4,876	129,000,000	89.3	1,210.0	146.0	2.8	4.1
TC Alternative 6A, Base Case	2041	6,235	165,000,000	114.0	1,540.0	187.0	3.6	5.3
TC Alternative 6A, Option Case	2041	8,146	216,000,000	149.0	2,010.0	244.0	4.7	6.9
TC Alternative 6B, Base Case	2021–2022	6,235	165,000,000	114.0	1,540.0	187.0	3.6	5.3
TC Alternative 6B, Option Case	2021–2022	8,146	216,000,000	149.0	2,010.0	244.0	4.7	6.9
TC Alternative 6C	2040	5,498	146,000,000	101.0	1,360.0	165.0	3.2	4.7
FFTF Decommissioning								
FFTF Decommissioning Alternative 1	2008–2107	1	26,500	0.02	0.25	0.03	0.00	0.00
FFTF Decommissioning Alternative 2, Facility Disposition	2021	40	1,060,000	0.73	9.89	1.20	0.02	0.03
FFTF Decommissioning Alternative 2, Disposition of Bulk Sodium	2017	52	1,380,000	0.95	12.90	1.56	0.03	0.04
FFTF Decommissioning Alternative 2, Disposition of Remote-Handled Special Components	2015–2016	43	1,140,000	0.79	10.60	1.29	0.02	0.04
FFTF Decommissioning Alternative 3, Facility Disposition	2013–2014	68	1,800,000	1.25	16.80	2.04	0.04	0.06
FFTF Decommissioning Alternative 3, Disposition of Bulk Sodium	2017	52	1,380,000	0.95	12.90	1.56	0.03	0.04

Table G–8. Peak-Year Employee Vehicle Emissions by Alternative *(continued)*

Alternative	Period	Total Vehicles	Kilometers Traveled	Emissions (metric tons per year)				
				VOCs	Carbon Monoxide	Nitrogen Dioxide	$PM_{2.5}$	PM_{10}
FFTF Decommissioning *(continued)*								
FFTF Decommissioning Alternative 3, Disposition of Remote-Handled Special Components	2015–2016	43	1,140,000	0.79	10.60	1.29	0.02	0.04
Waste Management (WM)								
WM Alternative 1	2009	88	2,330,000	1.6	21.8	2.6	0.1	0.1
WM Alternative 2	2019–2050	360	9,530,000	6.6	89.0	10.8	0.2	0.3
WM Alternative 2, Disposal Group 1	2051–2052	943	25,000,000	17.3	233.0	28.2	0.5	0.8
WM Alternative 2, Disposal Group 2	2101–2102	3,636	96,300,000	66.6	899.0	109.0	2.1	3.1
WM Alternative 2, Disposal Group 3	2166–2167	3,636	96,300,000	66.6	899.0	109.0	2.1	3.1
WM Alternative 3	2019–2050	360	9,530,000	6.6	89.0	10.8	0.2	0.3
WM Alternative 3, Disposal Group 1	2051–2052	940	24,900,000	17.2	232.0	28.1	0.5	0.8
WM Alternative 3, Disposal Group 2	2101–2102	3,603	95,400,000	66.0	891.0	108.0	2.1	3.1
WM Alternative 3, Disposal Group 3	2166–2167	3,602	95,400,000	66.0	891.0	108.0	2.1	3.1

Note: The calculations assumed 260 days a year per employee, 8-hour days, 5 days per week, and 2,080 hours per year; travel of 11 percent of vehicles from the west, an average distance of 45 miles (from Yakima); and travel of 89 percent of vehicles from the east, an average distance of 30 miles (midway between Richland and Pasco).

For the purpose of comparison, the most recent available data show total combined vehicular emissions for the four counties (Adams, Benton, Franklin, and Grant) as 10,011 metric tons of VOCs; 119,747 of carbon monoxide; 11,616 of nitrogen dioxide; 194 of $PM_{2.5}$; and 259 of PM_{10}. Heavy-duty vehicles were included in the averages (EPA 2007).

Emission factors calculated using the MOBILE6 emission factor model were 0.692 grams of VOCs per kilometer; 9.33 grams of carbon monoxide per kilometer; 1.13 grams of nitrogen dioxide per kilometer; 0.0216 grams of $PM_{2.5}$ per kilometer; and 0.0321 grams of PM_{10} per kilometer.

Key: FFTF=Fast Flux Test Facility; $PM_{2.5}$=particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Table G–9. Tank Closure Alternative 1 Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2008	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
Other infrastructure upgrades	2006	2008	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2008	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2008	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Operations								
Routine operations	2006	2008	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Deactivation								
Administrative controls	2008	2107	200EW+	1.36×10^{1}	1.54×10^{1}	(a)	(a)	5.44

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; WTP_AS=Waste Treatment Plant area source; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–10. Tank Closure Alternative 1 Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2008	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2008	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2008	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2008	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Operations										
Routine operations	2006	2008	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Administrative controls	2008	2107	200EW+	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; WTP_AS=Waste Treatment Plant area source.

Source: SAIC 2010a.

Table G–11. Tank Closure Alternative 2A Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Underground transfer lines	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2024	200E	3.82×10^{1}	4.55×10^{1}	1.51×10^{2}	1.39×10^{-2}	4.14
Other infrastructure upgrades	2006	2034	WTP_AS	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Cesium and Strontium Capsule Processing Facility	2088	2091	200E	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Tank risers	2013	2056	200EW	1.67	7.45×10^{-1}	6.75×10^{-2}	1.57×10^{-4}	1.88×10^{-1}
Modified sluicing retrieval system	2013	2092	200EW	3.31×10^{1}	1.28	7.07×10^{-1}	3.06×10^{-4}	1.30
Mobile retrieval system	2013	2052	200EW	2.51×10^{1}	1.09×10^{1}	2.09	3.49×10^{-3}	1.66
Vacuum-based retrieval system	2053	2092	200EW	2.17×10^{1}	9.81	1.97	3.13×10^{-3}	1.48
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2040	2041	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 3	2065	2066	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Double-shell tank replacement	2013	2054	200EW+	3.72×10^{1}	3.11×10^{1}	1.93×10^{2}	9.19×10^{-3}	3.15
Waste Treatment Plant replacement	2065	2076	WTP_AS	1.53×10^{3}	1.24×10^{3}	8.32×10^{2}	2.11	1.60×10^{2}
Underground transfer line replacement	2044	2044	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Effluent Treatment Facility	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility upgrade	2053	2055	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator upgrade 1	2040	2042	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator upgrade 2	2065	2067	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}

Table G–11. Tank Closure Alternative 2A Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2093	WTP_AS	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2092	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2092	200EW	1.36×10^{1}	1.54×10^{1}	(a)	(a)	5.44
Retrieval operations	2006	2092	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2092	200EW+	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2092	WTP_PS	1.01×10^{2}	2.18×10^{2}	3.17	9.78	3.67×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2093	2093	WTP_PS	1.01×10^{2}	2.18×10^{2}	3.17	9.78	3.67×10^{2}
Cesium and Strontium Capsule Processing Facility	2092	2093	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2092	200EW+	9.19	5.71×10^{-1}	4.39×10^{-2}	1.46×10^{-4}	3.95×10^{-1}
Mobile retrieval system	2013	2052	200EW+	1.15×10^{-1}	1.31×10^{-1}	(a)	(a)	4.61×10^{-2}
Vacuum-based retrieval system	2053	2092	200EW	1.48×10^{-1}	1.68×10^{-1}	(a)	(a)	5.92×10^{-2}
HLW Melter Interim Storage Facilities	2018	2192	WTP_AS	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2095	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator replacement	2006	2093	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2102	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
IHLW Interim Storage Facility	2094	2094	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	WTP_AS	1.01×10^{1}	2.18×10^{1}	3.17×10^{-1}	9.78×10^{-1}	3.67×10^{1}
Modified sluicing retrieval system	2013	2092	200EW	2.36×10^{1}	9.95×10^{-1}	8.78×10^{-2}	2.93×10^{-4}	9.07×10^{-1}
Mobile retrieval system	2013	2052	200EW+	1.25×10^{1}	9.82×10^{-1}	8.16×10^{-2}	3.00×10^{-4}	5.17×10^{-1}
Vacuum-based retrieval system	2053	2092	200EW	4.73×10^{-1}	3.71×10^{-2}	3.37×10^{-3}	1.13×10^{-5}	1.93×10^{-2}
Administrative controls	2094	2193	200EW+	1.36×10^{1}	1.54×10^{1}	(a)	(a)	5.44
Waste Treatment Plant upgrade	2094	2095	WTP_AS	1.01×10^{1}	2.18×10^{1}	3.17×10^{-1}	9.78×10^{-1}	2.11×10^{-1}
Cesium and Strontium Capsule Processing Facility	2094	2094	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 2	2096	2096	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}

Table G–11. Tank Closure Alternative 2A Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
Evaporator replacement 1	2043	2043	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 2	2068	2068	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 3	2094	2094	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–12. Tank Closure Alternative 2A Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Underground transfer lines	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Cesium and Strontium Capsule Processing Facility	2088	2091	200E	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Tank risers	2013	2056	200EW	1.98×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	200EW	1.07×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	200EW	9.99×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	200EW	1.28×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2040	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2065	2066	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2013	2054	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2065	2076	WTP_AS	2.00	4.19×10^{-1}	1.16×10^{-2}	3.78×10^{-1}	(a)	2.62	7.86×10^{-1}
Underground transfer line replacement	2044	2044	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility upgrade	2053	2055	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator upgrade 1	2040	2042	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator upgrade 2	2065	2067	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}

Table G–12. Tank Closure Alternative 2A Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2093	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2092	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2092	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2092	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2092	200EW+	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2092	WTP_PS	1.52	9.56×10^{-3}	3.45×10^{-6}	1.07×10^{-4}	2.42×10^{-2}	2.69×10^{-4}	9.06×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2093	2093	WTP_PS	1.52	9.56×10^{-3}	3.45×10^{-6}	1.07×10^{-4}	(a)	2.69×10^{-4}	9.06×10^{-4}
Cesium and Strontium Capsule Processing Facility	2092	2093	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2092	200EW+	1.07×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	200EW+	9.99×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	200EW	1.28×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2192	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2095	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator replacement	2006	2093	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2102	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
IHLW Interim Storage Facility	2094	2094	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	WTP_AS	1.52×10^{-1}	9.56×10^{-4}	3.45×10^{-7}	1.07×10^{-5}	2.42×10^{-3}	2.69×10^{-5}	9.06×10^{-5}
Modified sluicing retrieval system	2013	2092	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Administrative controls	2094	2193	200EW+	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant upgrade	2094	2095	WTP_AS	1.52×10^{-1}	9.56×10^{-4}	3.45×10^{-7}	1.07×10^{-5}	2.42×10^{-3}	2.69×10^{-5}	9.06×10^{-5}
Cesium and Strontium Capsule Processing Facility	2094	2094	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}

Table G–12. Tank Closure Alternative 2A Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Effluent Treatment Facility replacement 2	2096	2096	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2043	2043	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 2	2068	2068	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 3	2094	2094	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Closure										
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–13. Tank Closure Alternative 2B Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2024	200E	3.82×10^{1}	4.55×10^{1}	1.51×10^{2}	1.39×10^{-2}	4.14
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	1.85×10^{2}	4.09×10^{1}	1.65×10^{2}	2.50×10^{-1}	1.15×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Modified sluicing retrieval system	2013	2043	200EW+	6.69×10^{1}	2.58	1.43	6.19×10^{-4}	2.62
Mobile retrieval system	2013	2028	200EW	6.27×10^{1}	2.72×10^{1}	5.24	8.72×10^{-3}	4.15
Vacuum-based retrieval system	2029	2043	200EW	6.69×10^{1}	3.03×10^{1}	6.08	9.64×10^{-3}	4.55
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Effluent Treatment Facility	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Operations								
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2043	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2043	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2043	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2043	200EW+	1.86×10^{1}	1.15	8.87×10^{-2}	2.96×10^{-4}	7.98×10^{-1}
Mobile retrieval system	2013	2028	200EW+	2.88×10^{-1}	3.27×10^{-1}	(a)	(a)	1.15×10^{-1}
Vacuum-based retrieval system	2029	2043	200EW	4.56×10^{-1}	5.17×10^{-1}	(a)	(a)	1.82×10^{-1}
HLW Melter Interim Storage Facilities	2018	2145	WTP_AS	(a)	(a)	(a)	(a)	(a)

Table G–13. Tank Closure Alternative 2B Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations *(continued)*								
Effluent Treatment Facility	2006	2045	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator replacement	2006	2043	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	2.36×10^{1}	5.24×10^{1}	9.08×10^{-1}	2.69	8.86×10^{-1}
Modified sluicing retrieval system	2013	2043	200EW+	4.76×10^{1}	2.01	1.77×10^{-1}	5.91×10^{-4}	1.83
Mobile retrieval system	2013	2028	200EW	3.13×10^{1}	2.45	2.04×10^{-1}	7.50×10^{-4}	1.29
Vacuum-based retrieval system	2029	2043	200EW	1.46	1.14×10^{-1}	1.04×10^{-2}	3.49×10^{-5}	5.96×10^{-2}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement	2046	2046	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement	2044	2044	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Ancillary equipment grouting	2013	2037	200EW	3.46×10^{-1}	1.50	1.63	4.82×10^{-4}	1.16×10^{-1}
Ancillary equipment removal	2032	2037	200EW	3.28	1.50×10^{1}	4.40×10^{1}	4.92×10^{-3}	1.19
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Grout facility (tank-filling) construction	2032	2033	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2034	2043	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2044	2044	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Containment structure construction	2028	2031	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
BX and SX tank farm soil removal	2032	2037	200EW	3.99×10^{1}	1.13×10^{2}	2.56×10^{2}	3.73×10^{-2}	9.55
Containment structure deactivation	2038	2040	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	200EW	1.64×10^{3}	1.50×10^{3}	3.48×10^{3}	2.27	1.83×10^{2}
Postclosure care	2046	2145	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–14. Tank Closure Alternative 2B Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	7.08×10^{-2}	3.05×10^{-2}	4.50×10^{-4}	1.74×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	200EW+	2.17×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	200EW	2.50×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	3.95×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–14. Tank Closure Alternative 2B Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2043	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	6.97×10^{-2}	6.27×10^{-4}	2.11×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	(a)	6.27×10^{-4}	2.11×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2043	200EW+	2.17×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	200EW+	2.50×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	3.95×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2043	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	3.53×10^{-1}	2.23×10^{-3}	8.05×10^{-7}	2.49×10^{-5}	9.06×10^{-2}	6.27×10^{-5}	2.11×10^{-4}
Modified sluicing retrieval system	2013	2043	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement	2044	2044	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–14. Tank Closure Alternative 2B Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure										
Ancillary equipment grouting	2013	2037	200EW	2.69×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	200EW	1.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) construction	2032	2033	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2034	2043	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2044	2044	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	200EW	8.33×10^{-4}	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	200EW	2.41	4.80×10^{-1}	1.39×10^{-2}	4.49×10^{-1}	(a)	2.75	8.32×10^{-1}
Postclosure care	2046	2145	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–15. Tank Closure Alternative 3A Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2019	200E	4.00×10^{1}	4.76×10^{1}	1.58×10^{2}	1.45×10^{-2}	4.33
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Modified sluicing retrieval system	2013	2039	200EW+	7.68×10^{1}	2.96	1.64	7.11×10^{-4}	3.01
Mobile retrieval system	2013	2026	200EW	7.17×10^{1}	3.11×10^{1}	5.98	9.97×10^{-3}	4.74
Vacuum-based retrieval system	2027	2039	200EW	7.72×10^{1}	3.49×10^{1}	7.02	1.11×10^{-2}	5.25
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	3.27×10^{1}	7.22	7.03	4.41×10^{-2}	2.04
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	2.68×10^{1}	5.92	3.02	3.62×10^{-2}	1.67
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	8.66×10^{-1}	2.53	2.08×10^{1}	6.38×10^{-4}	1.46×10^{-1}
Bulk Vitrification Facility, 200-West Area	2016	2017	200W	8.96×10^{1}	1.98×10^{1}	1.22×10^{1}	1.21×10^{-1}	5.58
Solid-Liquid Separations Facility	2016	2017	SUPW	2.75×10^{1}	7.15	8.74	3.72×10^{-2}	1.79
Bulk Vitrification Facility, 200-East Area	2016	2017	200E	8.96×10^{1}	1.98×10^{1}	1.22×10^{1}	1.21×10^{-1}	5.58
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–15. Tank Closure Alternative 3A Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2039	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2039	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2039	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2039	200EW+	2.13×10^{1}	1.32	1.02×10^{-1}	3.39×10^{-4}	9.16×10^{-1}
Mobile retrieval system	2013	2026	200EW+	3.29×10^{-1}	3.73×10^{-1}	(a)	(a)	1.32×10^{-1}
Vacuum-based retrieval system	2027	2039	200EW	5.26×10^{-1}	5.97×10^{-1}	(a)	(a)	2.11×10^{-1}
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	1.38×10^{2}	1.26×10^{1}	8.55×10^{-1}	1.85×10^{-1}	7.32
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	2.74×10^{1}	1.75	1.17×10^{-1}	3.68×10^{-2}	1.40
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2018	2039	200W	7.80	1.66×10^{1}	1.76	4.44	8.25
Solid-Liquid Separations Facility	2018	2039	SUPW	7.25×10^{1}	1.24×10^{1}	8.54×10^{-1}	9.77×10^{-2}	4.26
Bulk Vitrification Facility, 200-East Area	2018	2039	200E	6.95	2.58×10^{1}	2.75	6.80	7.90
Effluent Treatment Facility	2006	2042	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2040	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
Modified sluicing retrieval system	2013	2039	200EW+	5.47×10^{1}	2.31	2.04×10^{-1}	6.79×10^{-4}	2.10
Mobile retrieval system	2013	2026	200EW	3.58×10^{1}	2.81	2.33×10^{-1}	8.57×10^{-4}	1.48
Vacuum-based retrieval system	2027	2039	200EW	1.68	1.32×10^{-1}	1.20×10^{-2}	4.03×10^{-5}	6.87×10^{-2}
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.01×10^{1}	2.22×10^{1}	3.61×10^{-1}	1.08	3.66×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08

Table G–15. Tank Closure Alternative 3A Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	1.38×10^{1}	1.26	8.55×10^{-2}	1.85×10^{-2}	7.32×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	2.74	1.75×10^{-1}	1.17×10^{-2}	3.68×10^{-3}	1.40×10^{-1}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2040	2041	200W	7.80×10^{-1}	1.66	1.76×10^{-1}	4.44×10^{-1}	8.25×10^{-1}
Solid-Liquid Separations Facility	2040	2041	SUPW	7.25	1.24	8.54×10^{-2}	9.77×10^{-3}	4.26×10^{-1}
Bulk Vitrification Facility, 200-East Area	2040	2041	200E	6.95×10^{-1}	2.58	2.75×10^{-1}	6.80×10^{-1}	7.90×10^{-1}
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2041	2041	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Grout facility (tank-filling) construction	2028	2029	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2030	2039	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2040	2040	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Ancillary equipment grouting	2012	2032	200EW	4.12×10^{-1}	1.79	1.94	5.73×10^{-4}	1.38×10^{-1}
Ancillary equipment removal	2028	2033	200EW	3.28	1.50×10^{1}	4.40×10^{1}	4.92×10^{-3}	1.19
BX and SX tank farm soil removal	2028	2033	200EW	3.99×10^{1}	1.13×10^{2}	2.56×10^{2}	3.73×10^{-2}	9.55
Containment structure construction	2024	2027	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation	2034	2036	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	1.64×10^{3}	1.50×10^{3}	3.48×10^{3}	2.27	1.83×10^{2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; SUPW=200-West Area supplemental treatment facility; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–16. Tank Closure Alternative 3A Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	1.25×10^{-2}	5.38×10^{-3}	7.94×10^{-5}	3.07×10^{-3}	(a)	6.25×10^{-2}	1.79×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	1.02×10^{-2}	4.42×10^{-3}	6.51×10^{-5}	2.52×10^{-3}	(a)	5.12×10^{-2}	1.47×10^{-2}
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2016	2017	200W	3.43×10^{-2}	1.48×10^{-2}	2.18×10^{-4}	8.43×10^{-3}	(a)	1.71×10^{-1}	4.90×10^{-2}
Solid-Liquid Separations Facility	2016	2017	SUPW	1.22×10^{-2}	4.74×10^{-3}	7.63×10^{-5}	2.87×10^{-3}	(a)	5.23×10^{-2}	1.50×10^{-2}
Bulk Vitrification Facility, 200-East Area	2016	2017	200E	3.43×10^{-2}	1.48×10^{-2}	2.18×10^{-4}	8.43×10^{-3}	(a)	1.71×10^{-1}	4.90×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–16. Tank Closure Alternative 3A Toxic Pollutant Emissions *(continued)*

				Emission Rate (metric tons per year)						
Facility/System	**Start Year**	**End Year**	**Location**	**Ammonia**	**Benzene**	**1,3-Butadiene**	**Formaldehyde**	**Mercury**	**Toluene**	**Xylene**
Operations										
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2039	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	6.11×10^{-2}	2.69×10^{-4}	9.06×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	(a)	2.69×10^{-4}	9.06×10^{-4}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW+	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	2.48×10^{-2}	1.94×10^{-2}	1.79×10^{-4}	8.34×10^{-3}	(a)	2.70×10^{-1}	7.66×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	3.75×10^{-3}	3.73×10^{-3}	2.89×10^{-5}	1.46×10^{-3}	(a)	5.39×10^{-2}	1.53×10^{-2}
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2018	2039	200W	9.36×10^{-3}	2.19×10^{-4}	2.52×10^{-8}	1.07×10^{-6}	9.95×10^{-3}	2.83×10^{-5}	8.06×10^{-5}
Solid-Liquid Separations Facility	2018	2039	SUPW	2.20×10^{-2}	1.13×10^{-2}	1.44×10^{-4}	5.29×10^{-3}	(a)	1.40×10^{-1}	3.99×10^{-2}
Bulk Vitrification Facility, 200-East Area	2018	2039	200E	1.30×10^{-2}	2.09×10^{-4}	3.27×10^{-8}	1.24×10^{-6}	1.10×10^{-2}	2.35×10^{-5}	6.74×10^{-5}
Effluent Treatment Facility	2006	2042	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2040	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
Modified sluicing retrieval system	2013	2039	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.51×10^{-1}	9.54×10^{-4}	3.44×10^{-7}	1.06×10^{-5}	6.11×10^{-3}	2.69×10^{-5}	9.06×10^{-5}

Table G–16. Tank Closure Alternative 3A Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	2.48×10^{-3}	1.94×10^{-3}	1.79×10^{-5}	8.34×10^{-4}	(a)	2.70×10^{-2}	7.66×10^{-3}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	3.75×10^{-4}	3.73×10^{-4}	2.89×10^{-6}	1.46×10^{-4}	(a)	5.39×10^{-3}	1.53×10^{-3}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2040	2041	200W	9.36×10^{-4}	2.19×10^{-5}	2.52×10^{-9}	1.07×10^{-7}	9.95×10^{-4}	2.83×10^{-6}	8.06×10^{-6}
Solid-Liquid Separations Facility	2040	2041	SUPW	2.20×10^{-3}	1.13×10^{-3}	1.44×10^{-5}	5.29×10^{-4}	(a)	1.40×10^{-2}	3.99×10^{-3}
Bulk Vitrification Facility, 200-East Area	2040	2041	200E	1.30×10^{-2}	2.09×10^{-4}	3.27×10^{-8}	1.24×10^{-6}	1.10×10^{-2}	2.35×10^{-5}	6.74×10^{-5}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2041	2041	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Closure										
Grout facility (tank-filling) construction	2028	2029	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	200EW	3.20×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	200EW	1.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	200EW	8.33×10^{-4}	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	2.41	4.80×10^{-1}	1.39×10^{-2}	4.49×10^{-1}	(a)	2.75	8.32×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–17. Tank Closure Alternative 3B Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2019	200E	4.00×10^{1}	4.76×10^{1}	1.58×10^{2}	1.45×10^{-2}	4.33
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.10
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Modified sluicing retrieval system	2013	2039	200EW+	7.68×10^{1}	2.96	1.64	7.11×10^{-4}	3.01
Mobile retrieval system	2013	2026	200EW	7.17×10^{1}	3.11×10^{1}	5.98	9.97×10^{-3}	4.74
Vacuum-based retrieval system	2027	2039	200EW	7.72×10^{1}	3.49×10^{1}	7.02	1.11×10^{-2}	5.25
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	3.27×10^{1}	7.22	7.03	4.41×10^{-2}	2.04
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	2.68×10^{1}	5.92	3.02	3.62×10^{-2}	1.67
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	8.66×10^{-1}	2.53	2.08×10^{1}	6.38×10^{-4}	1.46×10^{-1}
Cast Stone Facility, 200-West Area	2016	2017	200W	6.11×10^{1}	1.35×10^{1}	2.57×10^{1}	8.25×10^{-2}	3.81
Solid-Liquid Separations Facility	2016	2017	SUPW	2.75×10^{1}	7.15	8.74	3.72×10^{-2}	1.79
Cast Stone Facility, 200-East Area	2016	2017	200E	6.11×10^{1}	1.35×10^{1}	2.57×10^{1}	8.25×10^{-2}	3.81
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–17. Tank Closure Alternative 3B Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2039	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2039	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2039	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2039	200EW+	2.13×10^{1}	1.32	1.02×10^{-1}	3.39×10^{-4}	9.16×10^{-1}
Mobile retrieval system	2013	2026	200EW+	3.29×10^{-1}	3.73×10^{-1}	(a)	(a)	1.32×10^{-1}
Vacuum-based retrieval system	2027	2039	200EW	5.26×10^{-1}	5.97×10^{-1}	(a)	(a)	2.11×10^{-1}
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	1.38×10^{2}	1.26×10^{1}	8.55×10^{-1}	1.85×10^{-1}	7.32
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	2.74×10^{1}	1.75	1.17×10^{-1}	3.68×10^{-2}	1.40
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2018	2039	200W	1.48×10^{2}	3.20×10^{1}	2.25	2.00×10^{-1}	9.19
Solid-Liquid Separations Facility	2018	2039	SUPW	7.25×10^{1}	1.24×10^{1}	8.54×10^{-1}	9.77×10^{-2}	4.26
Cast Stone Facility, 200-East Area	2018	2039	200E	1.27×10^{2}	4.88×10^{1}	3.45	1.73×10^{-1}	9.41
Effluent Treatment Facility	2006	2042	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2040	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
Modified sluicing retrieval system	2013	2039	200EW+	5.47×10^{1}	2.31	2.04×10^{-1}	6.79×10^{-4}	2.10
Mobile retrieval system	2013	2026	200EW	3.58×10^{1}	2.81	2.33×10^{-1}	8.57×10^{-4}	1.48
Vacuum-based retrieval system	2027	2039	200EW	1.68	1.32×10^{-1}	1.20×10^{-2}	4.03×10^{-5}	6.87×10^{-2}
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.01×10^{1}	2.22×10^{1}	3.61×10^{-1}	1.08	3.66×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08

Table G–17. Tank Closure Alternative 3B Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	1.38×10^{1}	1.26	8.55×10^{-2}	1.85×10^{-2}	7.32×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	2.74	1.75×10^{-1}	1.17×10^{-2}	3.68×10^{-3}	1.40×10^{-1}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2040	2041	200W	1.48×10^{1}	3.20	2.25×10^{-1}	2.00×10^{-2}	9.19×10^{-1}
Solid-Liquid Separations Facility	2040	2041	SUPW	7.25	1.24	8.54×10^{-2}	9.77×10^{-3}	4.26×10^{-1}
Cast Stone Facility, 200-East Area	2040	2041	200E	1.27×10^{1}	4.88	3.45×10^{-1}	1.73×10^{-2}	9.41×10^{-1}
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2041	2041	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Grout facility (tank-filling) construction	2028	2029	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2030	2039	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2040	2040	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Ancillary equipment grouting	2012	2032	200EW	4.12×10^{-1}	1.79	1.94	5.73×10^{-4}	1.38×10^{-1}
Ancillary equipment removal	2028	2033	200EW	3.28	1.50×10^{1}	4.40×10^{1}	4.92×10^{-3}	1.19
BX and SX tank farm soil removal	2028	2033	200EW	3.99×10^{1}	1.13×10^{2}	2.56×10^{2}	3.73×10^{-2}	9.55
Containment structure construction	2024	2027	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation	2034	2036	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	1.64×10^{3}	1.50×10^{3}	3.48×10^{3}	2.27	1.83×10^{2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; SUPW=200-West Area supplemental treatment facility; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–18. Tank Closure Alternative 3B Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	1.25×10^{-2}	5.38×10^{-3}	7.94×10^{-5}	3.07×10^{-3}	(a)	6.25×10^{-2}	1.79×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	1.02×10^{-2}	4.42×10^{-3}	6.51×10^{-5}	2.52×10^{-3}	(a)	5.12×10^{-2}	1.47×10^{-2}
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2016	2017	200W	2.34×10^{-2}	1.01×10^{-2}	1.49×10^{-4}	5.75×10^{-3}	(a)	1.17×10^{-1}	3.35×10^{-2}
Solid-Liquid Separations Facility	2016	2017	SUPW	1.22×10^{-2}	4.74×10^{-3}	7.63×10^{-5}	2.87×10^{-3}	(a)	5.23×10^{-2}	1.50×10^{-2}
Cast Stone Facility, 200-East Area	2016	2017	200E	2.34×10^{-2}	1.01×10^{-2}	1.49×10^{-4}	5.75×10^{-3}	(a)	1.17×10^{-1}	3.35×10^{-2}
Effluent Treatment Facility	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–18. Tank Closure Alternative 3B Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2039	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	6.11×10^{-2}	2.69×10^{-4}	9.06×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	(a)	2.69×10^{-4}	9.06×10^{-4}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW+	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	2.48×10^{-2}	1.94×10^{-2}	1.79×10^{-4}	8.34×10^{-3}	(a)	2.70×10^{-1}	7.66×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	3.75×10^{-3}	3.73×10^{-3}	2.89×10^{-5}	1.46×10^{-3}	(a)	5.39×10^{-2}	1.53×10^{-2}
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2018	2039	200W	5.55×10^{-2}	2.43×10^{-2}	3.53×10^{-4}	1.38×10^{-2}	(a)	2.84×10^{-1}	8.13×10^{-2}
Solid-Liquid Separations Facility	2018	2039	SUPW	2.20×10^{-2}	1.13×10^{-2}	1.44×10^{-4}	5.29×10^{-3}	(a)	1.40×10^{-1}	3.99×10^{-2}
Cast Stone Facility, 200-East Area	2018	2039	200E	8.10×10^{-2}	2.48×10^{-2}	4.90×10^{-4}	1.73×10^{-2}	(a)	2.36×10^{-1}	6.86×10^{-2}
Effluent Treatment Facility replacement 1	2006	2042	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator replacement 1	2006	2040	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
Modified sluicing retrieval system	2013	2039	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.51×10^{-1}	9.54×10^{-4}	3.44×10^{-7}	1.06×10^{-5}	6.11×10^{-3}	2.69×10^{-5}	9.06×10^{-5}

Table G–18. Tank Closure Alternative 3B Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	2.48×10^{-3}	1.94×10^{-3}	1.79×10^{-5}	8.34×10^{-4}	(a)	2.70×10^{-2}	7.66×10^{-3}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	3.75×10^{-4}	3.73×10^{-4}	2.89×10^{-6}	1.46×10^{-4}	(a)	5.39×10^{-3}	1.53×10^{-3}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2040	2041	200W	5.55×10^{-3}	2.43×10^{-3}	3.53×10^{-5}	1.38×10^{-3}	(a)	2.84×10^{-2}	8.13×10^{-3}
Solid-Liquid Separations Facility	2040	2041	SUPW	2.20×10^{-3}	1.13×10^{-3}	1.44×10^{-5}	5.29×10^{-4}	(a)	1.40×10^{-2}	3.99×10^{-3}
Cast Stone Facility, 200-East Area	2040	2041	200E	8.10×10^{-3}	2.48×10^{-3}	4.90×10^{-5}	1.73×10^{-3}	(a)	2.36×10^{-2}	6.86×10^{-3}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2041	2041	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Closure										
Grout facility (tank-filling) construction	2028	2029	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	200EW	3.20×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	200EW	1.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	200EW	8.33×10^{-4}	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	2.41	4.80×10^{-1}	1.39×10^{-2}	4.49×10^{-1}	(a)	2.75	8.32×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–19. Tank Closure Alternative 3C Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2019	200E	4.00×10^{1}	4.76×10^{1}	1.58×10^{2}	1.45×10^{-2}	4.33
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Modified sluicing retrieval system	2013	2039	200EW+	7.68×10^{1}	2.96	1.64	7.11×10^{-4}	3.01
Mobile retrieval system	2013	2026	200EW	7.17×10^{1}	3.11×10^{1}	5.98	9.97×10^{-3}	4.74
Vacuum-based retrieval system	2027	2039	200EW	7.72×10^{1}	3.49×10^{1}	7.02	1.11×10^{-2}	5.25
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	3.27×10^{1}	7.22	7.03	4.41×10^{-2}	2.04
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	2.68×10^{1}	5.92	3.02	3.62×10^{-2}	1.67
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	8.66×10^{-1}	2.53	2.08×10^{1}	6.38×10^{-4}	1.46×10^{-1}
Steam Reforming Facility, 200-West Area	2016	2017	200W	2.06×10^{2}	4.55×10^{1}	3.58×10^{1}	2.78×10^{-1}	1.28×10^{1}
Solid-Liquid Separations Facility	2016	2017	SUPW	2.75×10^{1}	7.15	8.74	3.72×10^{-2}	1.79
Steam Reforming Facility, 200-East Area	2016	2017	200E	4.11×10^{2}	9.09×10^{1}	6.51×10^{1}	5.55×10^{-1}	2.56×10^{1}
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–19. Tank Closure Alternative 3C Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2039	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2039	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2039	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.01×10^{2}	2.22×10^{2}	3.61	1.08×10^{1}	3.66×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2039	200EW+	2.13×10^{1}	1.32	1.02×10^{-1}	3.39×10^{-4}	9.16×10^{-1}
Mobile retrieval system	2013	2026	200EW+	3.29×10^{-1}	3.73×10^{-1}	(a)	(a)	1.32×10^{-1}
Vacuum-based retrieval system	2027	2039	200EW	5.26×10^{-1}	5.97×10^{-1}	(a)	(a)	2.11×10^{-1}
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	1.38×10^{2}	1.26×10^{1}	8.55×10^{-1}	1.85×10^{-1}	7.32
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	2.74×10^{1}	1.75	1.17×10^{-1}	3.68×10^{-2}	1.40
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2018	2039	200W	1.84×10^{2}	6.08×10^{1}	8.37×10^{-3}	2.23×10^{-1}	2.53×10^{1}
Solid-Liquid Separations Facility	2018	2039	SUPW	7.25×10^{1}	1.24×10^{1}	8.54×10^{-1}	9.77×10^{-2}	4.26
Steam Reforming Facility, 200-East Area	2018	2039	200E	2.40×10^{2}	7.59×10^{1}	7.71×10^{-3}	1.89×10^{-1}	2.24×10^{1}
Effluent Treatment Facility	2006	2042	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2040	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
Modified sluicing retrieval system	2013	2039	200EW+	5.47×10^{1}	2.31	2.04×10^{-1}	6.79×10^{-4}	2.10
Mobile retrieval system	2013	2026	200EW+	3.58×10^{1}	2.81	2.33×10^{-1}	8.57×10^{-4}	1.48
Vacuum-based retrieval system	2027	2039	200EW	1.68	1.32×10^{-1}	1.20×10^{-2}	4.03×10^{-5}	6.87×10^{-2}
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.01×10^{1}	2.22×10^{1}	3.61×10^{-1}	1.08	3.66×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08

Table G–19. Tank Closure Alternative 3C Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	1.38×10^{1}	1.26	8.55×10^{-2}	1.85×10^{-2}	7.32×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	2.74	1.75×10^{-1}	1.17×10^{-2}	3.68×10^{-3}	1.40×10^{-1}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2040	2041	200W	1.84×10^{1}	6.08	8.37×10^{-4}	2.23×10^{-2}	2.53
Solid-Liquid Separations Facility	2040	2041	SUPW	7.25	1.24	8.54×10^{-2}	9.77×10^{-3}	4.26×10^{-1}
Steam Reforming Facility, 200-East Area	2040	2041	200E	2.40×10^{1}	7.59	7.71×10^{-4}	1.89×10^{-2}	2.24
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2041	2041	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Grout facility (tank-filling) construction	2028	2029	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2030	2039	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2040	2040	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Ancillary equipment grouting	2012	2032	200EW	4.12×10^{-1}	1.79	1.94	5.73×10^{-4}	1.38×10^{-1}
Ancillary equipment removal	2028	2033	200EW	3.28	1.50×10^{1}	4.40×10^{1}	4.92×10^{-3}	1.19
BX and SX tank farm soil removal	2028	2033	200EW	3.99×10^{1}	1.13×10^{2}	2.56×10^{2}	3.73×10^{-2}	9.55
Containment structure construction	2024	2027	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation	2034	2036	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	1.64×10^{3}	1.50×10^{3}	3.48×10^{3}	2.27	1.83×10^{2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; SUPW=200-West Area supplemental treatment facility; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–20. Tank Closure Alternative 3C Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	1.25×10^{-2}	5.38×10^{-3}	7.94×10^{-5}	3.07×10^{-3}	(a)	6.25×10^{-2}	1.79×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	1.02×10^{-2}	4.42×10^{-3}	6.51×10^{-5}	2.52×10^{-3}	(a)	5.12×10^{-2}	1.47×10^{-2}
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2016	2017	200W	7.86×10^{-2}	3.39×10^{-2}	5.00×10^{-4}	1.94×10^{-2}	(a)	3.93×10^{-1}	1.13×10^{-1}
Solid-Liquid Separations Facility	2016	2017	SUPW	1.22×10^{-2}	4.74×10^{-3}	7.63×10^{-5}	2.87×10^{-3}	(a)	5.23×10^{-2}	1.50×10^{-2}
Steam Reforming Facility, 200-East Area	2016	2017	200E	1.57×10^{-1}	6.78×10^{-2}	1.00×10^{-3}	3.87×10^{-2}	(a)	7.86×10^{-1}	2.25×10^{-1}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–20. Tank Closure Alternative 3C Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2039	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	6.11×10^{-2}	2.69×10^{-4}	9.06×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	1.51	9.54×10^{-3}	3.44×10^{-6}	1.06×10^{-4}	(a)	2.69×10^{-4}	9.06×10^{-4}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2039	200EW+	2.49×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW+	2.86×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	4.56×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	2.48×10^{-2}	1.94×10^{-2}	1.79×10^{-4}	8.34×10^{-3}	(a)	2.70×10^{-1}	7.66×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	3.75×10^{-3}	3.73×10^{-3}	2.89×10^{-5}	1.46×10^{-3}	(a)	5.39×10^{-2}	1.53×10^{-2}
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2018	2039	200W	9.14×10^{-2}	6.60×10^{-4}	2.10×10^{-7}	6.65×10^{-6}	9.96×10^{-3}	3.02×10^{-5}	9.41×10^{-5}
Solid-Liquid Separations Facility	2018	2039	SUPW	2.20×10^{-2}	1.13×10^{-2}	1.44×10^{-4}	5.29×10^{-3}	(a)	1.40×10^{-1}	3.99×10^{-2}
Steam Reforming Facility, 200-East Area	2018	2039	200E	8.26×10^{-2}	5.83×10^{-4}	1.90×10^{-7}	5.98×10^{-6}	1.10×10^{-2}	2.51×10^{-5}	7.88×10^{-5}
Effluent Treatment Facility	2006	2042	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2040	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}

Table G–20. Tank Closure Alternative 3C Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation										
Modified sluicing retrieval system	2013	2039	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	WTP_AS	1.51×10^{-1}	9.54×10^{-4}	3.44×10^{-7}	1.06×10^{-5}	6.11×10^{-3}	2.69×10^{-5}	9.06×10^{-5}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	2.48×10^{-3}	1.94×10^{-3}	1.79×10^{-5}	8.34×10^{-4}	(a)	2.70×10^{-2}	7.66×10^{-3}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	3.75×10^{-4}	3.73×10^{-4}	2.89×10^{-6}	1.46×10^{-4}	(a)	5.39×10^{-3}	1.53×10^{-3}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2040	2041	200W	9.14×10^{-3}	6.60×10^{-5}	2.10×10^{-8}	6.65×10^{-7}	9.96×10^{-4}	3.02×10^{-6}	9.41×10^{-6}
Solid-Liquid Separations Facility	2040	2041	SUPW	2.20×10^{-3}	1.13×10^{-3}	1.44×10^{-5}	5.29×10^{-4}	(a)	1.40×10^{-2}	3.99×10^{-3}
Steam Reforming Facility, 200-East Area	2040	2041	200E	8.26×10^{-3}	5.83×10^{-5}	1.90×10^{-8}	5.98×10^{-7}	1.10×10^{-3}	2.51×10^{-6}	7.88×10^{-6}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2043	2043	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2041	2041	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–20. Tank Closure Alternative 3C Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure										
Grout facility (tank-filling) construction	2028	2029	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	200EW	3.20×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	200EW	1.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	200EW	8.33×10^{-4}	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	200EW	2.41	4.80×10^{-1}	1.39×10^{-2}	4.49×10^{-1}	(a)	2.75	8.32×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–21. Tank Closure Alternative 4 Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2022	200E	4.00×10^{1}	4.76×10^{1}	1.58×10^{2}	1.45×10^{-2}	4.34
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Cesium and Strontium Capsule Processing Facility	2038	2041	200E	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	2.01×10^{1}	8.94	8.10×10^{-1}	1.88×10^{-3}	2.25
Mobile retrieval system	2013	2042	200EW	8.98×10^{1}	3.90×10^{1}	7.49	1.25×10^{-2}	5.94
Vacuum-based retrieval system	2013	2042	200EW	3.35×10^{1}	1.51×10^{1}	3.04	4.82×10^{-3}	2.27
Chemical wash system	2013	2042	200EW	2.27×10^{-1}	1.21	1.51×10^{-1}	3.78×10^{-4}	7.56×10^{-2}
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	3.27×10^{1}	7.22	7.03	4.41×10^{-2}	2.04
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	2.68×10^{1}	5.92	3.02	3.62×10^{-2}	1.67
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	8.66×10^{-1}	2.53	2.08×10^{1}	6.38×10^{-4}	1.46×10^{-1}
Bulk Vitrification Facility	2016	2017	200W	8.96×10^{1}	1.98×10^{1}	1.22×10^{1}	1.21×10^{-1}	5.58
Solid-Liquid Separations Facility	2016	2017	SUPW	2.75×10^{1}	7.15	8.74	3.72×10^{-2}	1.79
Cast Stone Facility	2016	2017	200E	6.11×10^{1}	1.35×10^{1}	2.57×10^{1}	8.25×10^{-2}	3.81
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–21. Tank Closure Alternative 4 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2043	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2042	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2042	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2042	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2042	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2042	WTP_PS	1.01×10^{2}	2.17×10^{2}	3.03	9.43	3.67×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2043	2043	WTP_PS	1.01×10^{2}	2.17×10^{2}	3.03	9.43	3.67×10^{2}
Cesium and Strontium Capsule Processing Facility	2042	2043	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Mobile retrieval system	2013	2042	200EW	4.13×10^{-1}	4.68×10^{-1}	(a)	(a)	1.65×10^{-1}
Vacuum-based retrieval system	2013	2042	200EW	2.28×10^{-1}	2.58×10^{-1}	(a)	(a)	9.12×10^{-2}
Chemical wash system	2013	2042	200EW	1.51×10^{-1}	5.29×10^{-1}	1.59	1.50×10^{-4}	(a)
HLW Melter Interim Storage Facilities	2018	2144	WTP_AS	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	1.38×10^{2}	1.26×10^{1}	8.55×10^{-1}	1.85×10^{-1}	7.32
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	2.74×10^{1}	1.75	1.17×10^{-1}	3.68×10^{-2}	1.40
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	200W	7.81	1.68×10^{1}	1.78	4.48	8.25
Solid-Liquid Separations Facility	2018	2039	SUPW	7.25×10^{1}	1.24×10^{1}	8.54×10^{-1}	9.77×10^{-2}	4.26
Cast Stone Facility	2018	2039	200E	1.27×10^{2}	4.88×10^{1}	3.46	1.73×10^{-1}	9.41
Effluent Treatment Facility	2006	2045	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2042	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}

Table G–21. Tank Closure Alternative 4 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation								
Mobile retrieval system	2013	2042	200EW	4.48×10^{1}	3.51	2.92×10^{-1}	1.07×10^{-3}	1.85
Vacuum-based retrieval system	2013	2042	200EW	7.29×10^{-1}	5.71×10^{-2}	5.19×10^{-3}	1.74×10^{-5}	2.98×10^{-2}
Chemical wash system	2013	2042	200EW	2.09	3.69×10^{-1}	3.11×10^{-2}	1.18×10^{-4}	9.94×10^{-2}
IHLW Interim Storage Facility	2044	2044	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	1.01×10^{1}	2.17×10^{1}	3.03×10^{-1}	9.43×10^{-1}	3.67×10^{1}
Cesium and Strontium Capsule Processing Facility	2044	2044	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	1.38×10^{1}	1.26	8.55×10^{-2}	1.85×10^{-2}	7.32×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	2.74	1.75×10^{-1}	1.17×10^{-2}	3.68×10^{-3}	1.40×10^{-1}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2040	2041	200W	7.81×10^{-1}	1.68	1.78×10^{-1}	4.48×10^{-1}	8.25×10^{-1}
Solid-Liquid Separations Facility	2040	2041	SUPW	7.25	1.24	8.54×10^{-2}	9.77×10^{-3}	4.26×10^{-1}
Cast Stone Facility	2040	2041	200E	1.27×10^{1}	4.88	3.46×10^{-1}	1.73×10^{-2}	9.41×10^{-1}
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2046	2046	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2043	2043	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}

Table G–21. Tank Closure Alternative 4 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure								
Grout facility (tank-filling) construction	2031	2032	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2033	2042	200EW	1.75×10^{1}	6.58×10^{1}	4.63	2.68×10^{-2}	5.53
Grout facility (tank-filling) deactivation	2043	2043	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Ancillary equipment grouting	2012	2032	200EW	2.98×10^{-1}	1.38	9.71×10^{-2}	4.70×10^{-4}	1.13×10^{-1}
Containment structure construction	2018	2021	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation	2042	2044	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	200EW	9.15×10^{2}	8.39×10^{2}	2.14×10^{3}	1.27	1.03×10^{2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Postclosure care	2045	2144	200EW	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2022	2033	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
BX tank farm deep soil removal	2034	2041	200E	1.54×10^{1}	7.13×10^{1}	7.55	2.43×10^{-2}	5.82
SX tank farm removal	2022	2033	200EW	1.72×10^{1}	7.75×10^{1}	1.01×10^{1}	2.71×10^{-2}	6.35
SX tank farm deep soil removal	2034	2041	200W	4.69×10^{1}	2.18×10^{2}	2.31×10^{1}	7.40×10^{-2}	1.78×10^{1}
Preprocessing Facility construction	2019	2021	200E	7.88×10^{2}	5.70×10^{2}	1.71×10^{2}	1.08	7.74×10^{1}
Preprocessing Facility operations	2022	2042	200E	1.81×10^{1}	5.53	4.04×10^{-4}	4.05×10^{-1}	1.77×10^{1}
Preprocessing Facility deactivation	2043	2043	200E	1.90	5.81×10^{-1}	4.24×10^{-5}	4.25×10^{-2}	1.86

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; SUPW=200-West Area supplemental treatment facility; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–22. Tank Closure Alternative 4 Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2022	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Cesium and Strontium Capsule Processing Facility	2038	2041	200E	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.38	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2042	200EW	3.58×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	200EW	1.98×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	200EW	5.55×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	1.25×10^{-2}	5.38×10^{-3}	7.94×10^{-5}	3.07×10^{-3}	(a)	6.25×10^{-2}	1.79×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	1.02×10^{-2}	4.42×10^{-3}	6.51×10^{-5}	2.52×10^{-3}	(a)	5.12×10^{-2}	1.47×10^{-2}
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	200W	3.43×10^{-2}	1.48×10^{-2}	2.18×10^{-4}	8.43×10^{-3}	(a)	1.71×10^{-1}	4.90×10^{-2}
Solid-Liquid Separations Facility	2016	2017	SUPW	1.22×10^{-2}	4.74×10^{-3}	7.63×10^{-5}	2.87×10^{-3}	(a)	5.23×10^{-2}	1.50×10^{-2}
Cast Stone Facility	2016	2017	200E	2.34×10^{-2}	1.01×10^{-2}	1.49×10^{-4}	5.75×10^{-3}	(a)	1.17×10^{-1}	3.35×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–22. Tank Closure Alternative 4 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2043	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2042	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2042	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2042	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2042	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2042	WTP_PS	1.51	9.55×10^{-3}	3.45×10^{-6}	1.07×10^{-4}	5.44×10^{-2}	2.69×10^{-4}	9.07×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2043	2043	WTP_PS	1.51	9.55×10^{-3}	3.45×10^{-6}	1.07×10^{-4}	5.44×10^{-2}	2.69×10^{-4}	9.07×10^{-4}
Cesium and Strontium Capsule Processing Facility	2042	2043	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Mobile retrieval system	2013	2042	200EW	3.58×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	200EW	1.98×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	200EW	5.55×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2144	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	2.48×10^{-2}	1.94×10^{-2}	1.79×10^{-4}	8.34×10^{-3}	(a)	2.70×10^{-1}	7.66×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	3.75×10^{-3}	3.73×10^{-3}	2.89×10^{-5}	1.46×10^{-3}	(a)	5.39×10^{-2}	1.53×10^{-2}
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	200W	9.36×10^{-3}	2.19×10^{-4}	2.52×10^{-8}	1.07×10^{-6}	1.00×10^{-2}	2.83×10^{-5}	8.06×10^{-5}
Solid-Liquid Separations Facility	2018	2039	SUPW	2.20×10^{-2}	1.13×10^{-2}	1.44×10^{-4}	5.29×10^{-3}	(a)	1.40×10^{-1}	3.99×10^{-2}
Cast Stone Facility	2018	2039	200E	8.10×10^{-2}	2.48×10^{-2}	4.90×10^{-4}	1.73×10^{-2}	(a)	2.36×10^{-1}	6.86×10^{-2}
Effluent Treatment Facility	2006	2045	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2042	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}

Table G–22. Tank Closure Alternative 4 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation										
Mobile retrieval system	2013	2042	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2044	2044	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	1.51×10^{-1}	9.55×10^{-4}	3.45×10^{-7}	1.07×10^{-5}	5.44×10^{-3}	2.69×10^{-5}	9.07×10^{-5}
Cesium and Strontium Capsule Processing Facility	2044	2044	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	2.48×10^{-3}	1.94×10^{-3}	1.79×10^{-5}	8.34×10^{-4}	(a)	2.70×10^{-2}	7.66×10^{-3}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	3.75×10^{-4}	3.73×10^{-4}	2.89×10^{-6}	1.46×10^{-4}	(a)	5.39×10^{-3}	1.53×10^{-3}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2040	2041	200W	9.36×10^{-4}	2.19×10^{-5}	2.52×10^{-9}	1.07×10^{-7}	1.00×10^{-3}	2.83×10^{-6}	8.06×10^{-6}
Solid-Liquid Separations Facility	2040	2041	SUPW	2.20×10^{-3}	1.13×10^{-3}	1.44×10^{-5}	5.29×10^{-4}	(a)	1.40×10^{-2}	3.99×10^{-3}
Cast Stone Facility	2040	2041	200E	8.10×10^{-3}	2.48×10^{-3}	4.90×10^{-5}	1.73×10^{-3}	(a)	2.36×10^{-2}	6.86×10^{-3}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2046	2046	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2043	2043	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–22. Tank Closure Alternative 4 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure										
Grout facility (tank-filling) construction	2031	2032	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2033	2042	200EW	1.04×10^{-1}	1.39×10^{-2}	5.83×10^{-4}	1.76×10^{-2}	(a)	6.10×10^{-3}	4.25×10^{-3}
Grout facility (tank-filling) deactivation	2043	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	200EW	2.17×10^{-3}	2.92×10^{-4}	1.22×10^{-5}	3.70×10^{-4}	(a)	1.28×10^{-4}	8.93×10^{-5}
Containment structure construction	2018	2021	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2042	2044	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	200EW	1.35	7.60×10^{-2}	7.27×10^{-3}	2.19×10^{-1}	(a)	7.60×10^{-2}	5.30×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2045	2144	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2022	2033	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
BX tank farm deep soil removal	2034	2041	200E	1.12×10^{-1}	1.51×10^{-2}	6.32×10^{-4}	1.91×10^{-2}	(a)	6.61×10^{-3}	4.61×10^{-3}
SX tank farm removal	2022	2033	200EW	1.22×10^{-1}	1.65×10^{-2}	6.88×10^{-4}	2.08×10^{-2}	(a)	8.22×10^{-3}	5.30×10^{-3}
SX tank farm deep soil removal	2034	2041	200W	3.42×10^{-1}	4.61×10^{-2}	1.93×10^{-3}	5.83×10^{-2}	(a)	2.02×10^{-2}	1.41×10^{-2}
Preprocessing Facility construction	2019	2021	200E	9.20×10^{-1}	2.03×10^{-1}	5.38×10^{-3}	1.77×10^{-1}	(a)	1.37	4.10×10^{-1}
Preprocessing Facility operations	2022	2042	200E	8.28×10^{-3}	4.72×10^{-4}	2.90×10^{-8}	1.66×10^{-6}	(a)	7.15×10^{-5}	2.02×10^{-4}
Preprocessing Facility deactivation	2043	2043	200E	8.69×10^{-4}	4.96×10^{-5}	3.05×10^{-9}	1.74×10^{-7}	(a)	7.51×10^{-6}	2.12×10^{-5}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–23. Tank Closure Alternative 5 Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2019	200E	4.00×10^{1}	4.76×10^{1}	1.58×10^{2}	1.45×10^{-2}	4.34
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.65×10^{2}	6.21×10^{2}	1.25×10^{2}	1.06	8.00×10^{1}
Cesium and Strontium Capsule Processing Facility	2029	2032	200E	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Double-shell tank replacement	2014	2019	200EW+	3.72×10^{1}	3.11×10^{1}	1.93×10^{2}	9.19×10^{-3}	3.15
Sulfate Removal Facility	2016	2017	WTP_AS	3.93×10^{2}	8.69×10^{1}	5.83×10^{1}	5.31×10^{-1}	2.45×10^{1}
Modified sluicing retrieval system	2013	2033	200EW	7.14×10^{1}	2.75	1.52	6.60×10^{-4}	2.80
Mobile retrieval system	2013	2023	200EW	9.13×10^{1}	3.96×10^{1}	7.62	1.27×10^{-2}	6.04
Vacuum-based retrieval system	2024	2033	200EW	1.00×10^{2}	4.54×10^{1}	9.12	1.45×10^{-2}	6.82
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	3.27×10^{1}	7.22	7.03	4.41×10^{-2}	2.04
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	2.68×10^{1}	5.92	3.02	3.62×10^{-2}	1.67
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	8.66×10^{-1}	2.53	2.08×10^{1}	6.38×10^{-4}	1.46×10^{-1}
Bulk Vitrification Facility	2016	2017	200W	8.96×10^{1}	1.98×10^{1}	1.22×10^{1}	1.21×10^{-1}	5.58
Solid-Liquid Separations Facility	2016	2017	SUPW	2.75×10^{1}	7.15	8.74	3.72×10^{-2}	1.79
Cast Stone Facility	2016	2017	200E	6.11×10^{1}	1.35×10^{1}	2.57×10^{1}	8.25×10^{-2}	3.81
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–23. Tank Closure Alternative 5 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2034	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2033	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2033	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2033	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2033	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2033	WTP_PS	2.49×10^{2}	7.63×10^{2}	5.13	1.74×10^{1}	1.26×10^{3}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	WTP_PS	2.49×10^{2}	7.63×10^{2}	5.13	1.74×10^{1}	1.26×10^{3}
Cesium and Strontium Capsule Processing Facility	2033	2034	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Double-shell tank replacement	2020	2033	200EW+	2.12×10^{-2}	2.40×10^{-2}	(a)	(a)	8.47×10^{-3}
Sulfate Removal Facility	2018	2033	WTP_AS	1.65×10^{2}	2.11×10^{1}	1.45	2.22×10^{-1}	9.18
Modified sluicing retrieval system	2013	2033	200EW	1.98×10^{1}	1.23	9.46×10^{-2}	3.15×10^{-4}	8.51×10^{-1}
Mobile retrieval system	2013	2023	200EW	4.19×10^{-1}	4.75×10^{-1}	(a)	(a)	1.68×10^{-1}
Vacuum-based retrieval system	2024	2033	200EW	6.84×10^{-1}	7.75×10^{-1}	(a)	(a)	2.74×10^{-1}
HLW Melter Interim Storage Facilities	2018	2139	WTP_AS	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	1.38×10^{2}	1.26×10^{1}	8.55×10^{-1}	1.85×10^{-1}	7.32
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	2.74×10^{1}	1.75	1.17×10^{-1}	3.68×10^{-2}	1.40
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2033	200W	1.07×10^{1}	2.09×10^{1}	2.21	5.58	1.13×10^{1}
Solid-Liquid Separations Facility	2018	2033	SUPW	9.97×10^{1}	1.70×10^{1}	1.17	1.34×10^{-1}	5.85
Cast Stone Facility	2018	2033	200E	1.75×10^{2}	6.71×10^{1}	4.70	2.38×10^{-1}	1.29×10^{1}
Effluent Treatment Facility	2006	2036	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2034	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}

Table G–23. Tank Closure Alternative 5 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation								
Sulfate Removal Facility	2034	2035	WTP_AS	1.65×10^{1}	2.11	1.45×10^{-1}	2.22×10^{-2}	9.18×10^{-1}
Modified sluicing retrieval system	2013	2033	200EW	5.08×10^{1}	2.14	1.89×10^{-1}	6.31×10^{-4}	1.96
Mobile retrieval system	2013	2023	200EW	4.56×10^{1}	3.57	2.97×10^{-1}	1.09×10^{-3}	1.88
Vacuum-based retrieval system	2024	2033	200EW	2.19	1.71×10^{-1}	1.56×10^{-2}	5.23×10^{-5}	8.94×10^{-2}
IHLW Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	WTP_AS	2.38×10^{1}	8.10×10^{1}	1.52	1.64	1.19×10^{2}
Cesium and Strontium Capsule Processing Facility	2035	2035	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	1.38×10^{1}	1.26	8.55×10^{-2}	1.85×10^{-2}	7.32×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	2.74	1.75×10^{-1}	1.17×10^{-2}	3.68×10^{-3}	1.40×10^{-1}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	200W	1.07	2.09	2.21×10^{-1}	5.58×10^{-1}	1.13
Solid-Liquid Separations Facility	2034	2035	SUPW	9.97	1.70	1.17×10^{-1}	1.34×10^{-2}	5.85×10^{-1}
Cast Stone Facility	2034	2035	200E	1.75×10^{1}	6.71	4.70×10^{-1}	2.38×10^{-2}	1.29
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2037	2037	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2035	2035	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}

Table G–23. Tank Closure Alternative 5 Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure								
Grout facility (tank-filling) construction	2022	2023	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2024	2033	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2034	2034	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Ancillary equipment grouting	2013	2033	200EW	3.50×10^{-1}	1.52	1.65	4.87×10^{-4}	1.18×10^{-1}
Hanford barrier construction	2029	2039	200EW	1.74×10^{3}	1.59×10^{3}	3.48×10^{3}	2.41	1.95×10^{2}
Decontamination and decommissioning of 10 selected facilities	2012	2022	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Postclosure care	2040	2139	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; SUPW=200-West Area supplemental treatment facility; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–24. Tank Closure Alternative 5 Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.99×10^{-1}	2.10×10^{-1}	5.82×10^{-3}	1.89×10^{-1}	(a)	1.31	3.94×10^{-1}
Cesium and Strontium Capsule Processing Facility	2029	2032	200E	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2014	2019	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2016	2017	WTP_AS	1.50×10^{-1}	6.48×10^{-2}	9.55×10^{-4}	3.70×10^{-2}	(a)	7.51×10^{-1}	2.15×10^{-1}
Modified sluicing retrieval system	2013	2033	200EW	2.32×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	200EW	3.63×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	200EW	5.93×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	200EW	1.25×10^{-2}	5.38×10^{-3}	7.94×10^{-5}	3.07×10^{-3}	(a)	6.25×10^{-2}	1.79×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	200E	1.02×10^{-2}	4.42×10^{-3}	6.51×10^{-5}	2.52×10^{-3}	(a)	5.12×10^{-2}	1.47×10^{-2}
Transuranic Waste Interim Storage Facility	2008	2009	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	200W	3.43×10^{-2}	1.48×10^{-2}	2.18×10^{-4}	8.43×10^{-3}	(a)	1.71×10^{-1}	4.90×10^{-2}
Solid-Liquid Separations Facility	2016	2017	SUPW	1.22×10^{-2}	4.74×10^{-3}	7.63×10^{-5}	2.87×10^{-3}	(a)	5.23×10^{-2}	1.50×10^{-2}
Cast Stone Facility	2016	2017	200E	2.34×10^{-2}	1.01×10^{-2}	1.49×10^{-4}	5.75×10^{-3}	(a)	1.17×10^{-1}	3.35×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–24. Tank Closure Alternative 5 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2034	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2033	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2033	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2033	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2033	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2033	WTP_PS	5.69	3.28×10^{-2}	1.29×10^{-5}	3.93×10^{-4}	8.51×10^{-2}	5.02×10^{-4}	1.97×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	WTP_PS	5.69	3.28×10^{-2}	1.29×10^{-5}	3.93×10^{-4}	(a)	5.02×10^{-4}	1.97×10^{-3}
Cesium and Strontium Capsule Processing Facility	2033	2034	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Double-shell tank replacement	2020	2033	200EW+	1.84×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2018	2033	WTP_AS	3.90×10^{-2}	2.44×10^{-2}	2.66×10^{-4}	1.15×10^{-2}	(a)	3.21×10^{-1}	9.13×10^{-2}
Modified sluicing retrieval system	2013	2033	200EW	2.32×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	200EW	3.63×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	200EW	5.93×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2139	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	200EW	2.48×10^{-2}	1.94×10^{-2}	1.79×10^{-4}	8.34×10^{-3}	(a)	2.70×10^{-1}	7.66×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	200E	3.75×10^{-3}	3.73×10^{-3}	2.89×10^{-5}	1.46×10^{-3}	(a)	5.39×10^{-2}	1.53×10^{-2}
Transuranic Waste Interim Storage Facility	2009	2034	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2033	200W	1.29×10^{-2}	3.01×10^{-4}	3.46×10^{-8}	1.47×10^{-6}	1.24×10^{-2}	3.89×10^{-5}	1.11×10^{-4}
Solid-Liquid Separations Facility	2018	2033	SUPW	3.03×10^{-2}	1.55×10^{-2}	1.98×10^{-4}	8.08×10^{-3}	(a)	1.92×10^{-1}	5.49×10^{-2}
Cast Stone Facility	2018	2033	200E	1.11×10^{-1}	3.41×10^{-2}	6.74×10^{-4}	2.38×10^{-2}	(a)	3.25×10^{-1}	9.43×10^{-2}
Effluent Treatment Facility	2006	2036	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2034	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}

Table G–24. Tank Closure Alternative 5 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation										
Sulfate Removal Facility	2034	2035	WTP_AS	3.90×10^{-3}	2.44×10^{-3}	2.66×10^{-5}	1.15×10^{-3}	(a)	3.21×10^{-2}	9.13×10^{-3}
Modified sluicing retrieval system	2013	2033	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	WTP_AS	5.36×10^{-1}	3.09×10^{-3}	1.21×10^{-6}	3.70×10^{-5}	8.01×10^{-3}	4.72×10^{-5}	1.85×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2035	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	200EW	2.48×10^{-3}	1.94×10^{-3}	1.79×10^{-5}	8.34×10^{-4}	(a)	2.70×10^{-2}	7.66×10^{-3}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	200E	3.75×10^{-4}	3.73×10^{-4}	2.89×10^{-6}	1.46×10^{-4}	(a)	5.39×10^{-3}	1.53×10^{-3}
Transuranic Waste Interim Storage Facility	2035	2035	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	200W	1.29×10^{-3}	3.01×10^{-5}	3.46×10^{-9}	1.47×10^{-7}	1.24×10^{-3}	3.89×10^{-6}	1.11×10^{-5}
Solid-Liquid Separations Facility	2034	2035	SUPW	3.03×10^{-3}	1.55×10^{-3}	1.98×10^{-5}	8.08×10^{-4}	(a)	1.92×10^{-2}	5.49×10^{-3}
Cast Stone Facility	2034	2035	200E	1.11×10^{-2}	3.41×10^{-3}	6.74×10^{-5}	2.38×10^{-3}	(a)	3.25×10^{-2}	9.43×10^{-3}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2037	2037	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2035	2035	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–24. Tank Closure Alternative 5 Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure								(a)		
Grout facility (tank-filling) construction	2022	2023	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2024	2033	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2034	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2013	2033	200EW	2.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Hanford barrier construction	2029	2039	200EW	2.55	5.09×10^{-1}	1.48×10^{-2}	4.77×10^{-1}	(a)	2.91	8.83×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2012	2022	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2040	2139	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; SUPW=200-West Area supplemental treatment facility; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–25. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2142	200E	5.95×10^{1}	7.09×10^{1}	2.35×10^{2}	2.16×10^{-2}	6.45
Other infrastructure upgrades	2006	2034	200EW	1.11	9.43×10^{-2}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant original	2006	2017	WTP_AS	3.37×10^{2}	2.41×10^{2}	2.86×10^{2}	4.64×10^{-1}	3.29×10^{1}
Cesium and Strontium Capsule Processing Facility	2158	2161	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Tank risers	2013	2016	200EW	2.01×10^{1}	8.94	8.10×10^{-1}	1.88×10^{-3}	2.25
Double-shell tank replacement 1	2029	2034	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Double-shell tank replacement 2	2069	2074	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Double-shell tank replacement 3	2109	2114	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Mobile retrieval system	2013	2162	200EW	2.73×10^{1}	1.19×10^{1}	2.28	3.80×10^{-3}	1.81
Vacuum-based retrieval system	2013	2162	200EW	5.79	2.62	5.26×10^{-1}	8.34×10^{-4}	3.94×10^{-1}
Chemical wash system	2013	2162	200EW	5.84×10^{-2}	3.12×10^{-1}	3.89×10^{-2}	9.74×10^{-5}	1.95×10^{-2}
HLW Melter Interim Storage Facility 1	2017	2018	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2037	2038	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 3	2057	2058	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 4	2077	2078	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 5	2097	2098	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 6	2117	2118	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 7	2137	2138	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
Underground transfer line replacement	2064	2064	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Waste Treatment Plant replacement 1	2067	2078	WTP_AS	3.30×10^{2}	2.36×10^{2}	2.34×10^{2}	4.54×10^{-1}	3.22×10^{1}
Waste Treatment Plant replacement 2	2127	2138	WTP_AS	3.30×10^{2}	2.36×10^{2}	2.34×10^{2}	4.54×10^{-1}	3.22×10^{1}
IHLW Shipping/Transfer Facility 1	2070	2072	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Shipping/Transfer Facility 2	2130	2132	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Module, additional	2074	2160	200E	6.07×10^{1}	7.23×10^{1}	2.40×10^{2}	2.20×10^{-2}	6.57
HLW Debris Storage Facility	2041	2110	200EW	3.37×10^{-1}	1.56	1.10×10^{-1}	5.31×10^{-4}	1.28×10^{-1}

Table G–25. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions (*continued*)

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction *(continued)*								
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 2	2053	2055	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 3	2083	2085	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 4	2113	2115	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 5	2143	2145	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 2	2040	2042	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 3	2065	2067	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 4	2090	2092	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 5	2115	2117	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 6	2140	2142	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Operations								
IHLW Interim Storage Facility	2018	2163	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2162	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2162	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2162	WTP_PS	2.71×10^{2}	5.32×10^{2}	2.08	1.07×10^{1}	9.91×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	WTP_PS	2.71×10^{2}	5.32×10^{2}	2.08	1.07×10^{1}	9.91×10^{2}
Cesium and Strontium Capsule Processing Facility	2162	2163	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Mobile retrieval system	2013	2162	200EW	1.26×10^{-1}	1.42×10^{-1}	(a)	(a)	5.02×10^{-2}
Vacuum-based retrieval system	2013	2162	200EW	3.95×10^{-2}	4.47×10^{-2}	(a)	(a)	1.58×10^{-2}
Chemical wash system	2013	2162	200EW	3.89×10^{-2}	1.36×10^{-1}	4.09×10^{-1}	3.87×10^{-5}	(a)
HLW Melter Interim Storage Facilities	2018	2262	WTP_AS	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2042	2153	200EW	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}

Table G–25. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations (*continued*)								
Evaporator	2018	2163	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2167	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
Mobile retrieval system	2013	2162	200EW	1.36×10^{1}	1.07	8.89×10^{-2}	3.27×10^{-4}	5.63×10^{-1}
Vacuum-based retrieval system	2013	2162	200EW	1.26×10^{-1}	9.89×10^{-3}	8.99×10^{-4}	3.02×10^{-6}	5.15×10^{-3}
Chemical wash system	2013	2162	200EW	5.39×10^{-1}	9.51×10^{-2}	8.02×10^{-3}	3.03×10^{-5}	2.56×10^{-2}
IHLW Interim Storage Facility	2078	2188	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2078	2080	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Waste Treatment Plant replacement 1	2138	2140	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Waste Treatment Plant replacement 2	2164	2166	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Cesium and Strontium Capsule Processing Facility	2164	2164	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 3	2116	2116	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 4	2146	2146	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 5	2167	2167	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
HLW Debris Storage Facilities	2154	2154	200EW	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2043	2043	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 2	2068	2068	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 3	2093	2093	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 4	2118	2118	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 5	2143	2143	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 6	2168	2168	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}

Table G–25. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure								
Containment structure construction 1	2038	2041	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 2	2061	2064	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 3	2084	2087	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 4	2107	2110	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 5	2122	2125	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 6	2138	2141	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation 1	2062	2064	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 2	2085	2087	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 3	2108	2110	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 4	2123	2125	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 5	2146	2148	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	1.94
Containment structure deactivation 6	2138	2140	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	1.94
Containment structure deactivation 7	2162	2164	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	200EW	1.72×10^{3}	1.57×10^{3}	3.65×10^{3}	2.38	1.93×10^{2}
Postclosure care	2151	2250	200EW	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
T tank farm removal	2126	2137	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
BY tank farm removal	2111	2122	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
BX tank farm removal	2042	2053	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
C tank farm removal	2088	2099	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
A tank farm removal	2142	2153	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
AX tank farm removal	2142	2153	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
S tank farm removal	2126	2137	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
TY tank farm removal	2111	2122	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
TX tank farm removal	2088	2099	200EW	2.07×10^{1}	9.31×10^{1}	1.21×10^{1}	3.25×10^{-2}	7.63

Table G–25. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*								
U tank farm removal	2065	2076	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
SX tank farm removal	2042	2053	200EW	1.72×10^{1}	7.75×10^{1}	1.01×10^{1}	2.71×10^{-2}	6.35
B tank farm deep soil removal	2077	2084	200E	3.84	1.78×10^{1}	1.89	6.06×10^{-3}	1.46
T tank farm deep soil removal	2138	2145	200W	2.95×10^{1}	1.37×10^{2}	1.45×10^{1}	4.66×10^{-2}	1.12×10^{1}
BX tank farm deep soil removal	2054	2061	200E	1.23×10^{2}	5.71×10^{2}	6.04×10^{1}	1.94×10^{-1}	4.66×10^{1}
C tank farm deep soil removal	2100	2107	200EW	2.33×10^{-1}	1.08	1.15×10^{-1}	3.68×10^{-4}	8.82×10^{-2}
A tank farm deep soil removal	2154	2161	200E	6.99×10^{-1}	3.24	3.43×10^{-1}	1.10×10^{-3}	2.65×10^{-1}
AX tank farm deep soil removal	2154	2161	200E	1.16×10^{1}	5.41×10^{1}	5.72	1.84×10^{-2}	4.41
TX tank farm deep soil removal	2100	2107	200EW	3.67×10^{1}	1.70×10^{2}	1.80×10^{1}	5.79×10^{-2}	1.39×10^{1}
U tank farm deep soil removal	2077	2084	200EW	1.92×10^{1}	8.92×10^{1}	9.44	3.03×10^{-2}	7.28
SX tank farm deep soil removal	2054	2061	200W	4.69×10^{1}	2.18×10^{2}	2.31×10^{1}	7.40×10^{-2}	1.78×10^{1}
Preprocessing Facility construction	2039	2041	200E	7.88×10^{2}	5.70×10^{2}	1.71×10^{2}	1.08	7.74×10^{1}
Preprocessing Facility operations	2042	2162	200E	3.54×10^{-1}	1.53×10^{-1}	1.41×10^{-2}	4.21×10^{-2}	3.42×10^{-1}
Preprocessing Facility deactivation	2163	2163	200E	5.56×10^{-2}	2.40×10^{-2}	2.22×10^{-3}	6.62×10^{-3}	5.38×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–26. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	WTP_AS	3.89×10^{-1}	8.63×10^{-2}	2.28×10^{-3}	7.49×10^{-2}	(a)	5.89×10^{-1}	1.75×10^{-1}
Cesium and Strontium Capsule Processing Facility	2158	2161	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Tank risers	2013	2016	200EW	2.38	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	200EW	1.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	3.42×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	1.43×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	WTP_AS	3.81×10^{-1}	8.45×10^{-2}	2.23×10^{-3}	7.33×10^{-2}	(a)	5.76×10^{-1}	1.72×10^{-1}
Waste Treatment Plant replacement 2	2127	2138	WTP_AS	3.81×10^{-1}	8.45×10^{-2}	2.23×10^{-3}	7.33×10^{-2}	(a)	5.76×10^{-1}	1.72×10^{-1}
IHLW Shipping/Transfer Facility 1	2070	2072	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Module, additional	2074	2160	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–26. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction *(continued)*										
HLW Debris Storage Facilities	2041	2110	200EW	2.46×10^{-3}	3.31×10^{-4}	1.39×10^{-5}	4.18×10^{-4}	(a)	1.45×10^{-4}	1.01×10^{-4}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 2	2053	2055	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 3	2083	2085	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 4	2113	2115	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 5	2143	2145	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 2	2040	2042	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 3	2065	2067	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 4	2090	2092	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 5	2115	2117	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 6	2140	2142	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations										
IHLW Interim Storage Facility	2018	2163	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2162	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	WTP_PS	4.09	2.58×10^{-2}	9.32×10^{-6}	2.88×10^{-4}	1.26×10^{-2}	7.29×10^{-4}	2.45×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	WTP_PS	4.09	2.58×10^{-2}	1.35×10^{-3}	2.88×10^{-4}	(a)	7.29×10^{-4}	2.45×10^{-3}
Cesium and Strontium Capsule Processing Facility	2162	2163	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Mobile retrieval system	2013	2162	200EW	1.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	3.42×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	1.43×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–26. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations *(continued)*										
HLW Debris Storage Facilities	2042	2153	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2018	2163	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2167	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
Mobile retrieval system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2078	2080	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Waste Treatment Plant replacement 1	2138	2140	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Waste Treatment Plant replacement 2	2164	2166	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Cesium and Strontium Capsule Processing Facility	2164	2164	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 3	2116	2116	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 4	2146	2146	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 5	2167	2167	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
HLW Debris Storage Facilities	2154	2154	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2043	2043	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 2	2068	2068	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 3	2093	2093	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 4	2118	2118	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 5	2143	2143	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 6	2168	2168	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–26. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure										
Containment structure construction 1	2038	2041	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	200EW	2.53	5.04×10^{-1}	1.46×10^{-2}	4.72×10^{-1}	(a)	2.88	8.74×10^{-1}
Postclosure care	2151	2250	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
T tank farm removal	2126	2137	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
BY tank farm removal	2111	2122	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
BX tank farm removal	2042	2053	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
C tank farm removal	2088	2099	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
A tank farm removal	2142	2153	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
AX tank farm removal	2142	2153	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
S tank farm removal	2126	2137	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
TY tank farm removal	2111	2122	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
TX tank farm removal	2088	2099	200NEW	1.46×10^{-1}	1.98×10^{-2}	8.25×10^{-4}	2.49×10^{-2}	(a)	9.86×10^{-3}	6.36×10^{-3}

Table G–26. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*										
U tank farm removal	2065	2076	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
SX tank farm removal	2042	2053	200EW	1.22×10^{-1}	1.65×10^{-2}	6.88×10^{-4}	2.08×10^{-2}	(a)	8.22×10^{-3}	5.30×10^{-3}
B tank farm deep soil removal	2077	2084	200E	2.80×10^{-2}	3.77×10^{-3}	1.58×10^{-4}	4.77×10^{-3}	(a)	1.65×10^{-3}	1.15×10^{-3}
T tank farm deep soil removal	2138	2145	200W	2.15×10^{-1}	2.90×10^{-2}	1.21×10^{-3}	3.67×10^{-2}	(a)	1.27×10^{-2}	8.85×10^{-3}
BX tank farm deep soil removal	2054	2061	200E	8.97×10^{-1}	1.21×10^{-1}	5.06×10^{-3}	1.53×10^{-1}	(a)	5.29×10^{-2}	3.69×10^{-2}
C tank farm deep soil removal	2100	2107	200EW	1.70×10^{-3}	2.29×10^{-4}	9.58×10^{-6}	2.89×10^{-4}	(a)	1.00×10^{-4}	6.99×10^{-5}
A tank farm deep soil removal	2154	2161	200E	5.10×10^{-3}	6.86×10^{-4}	2.88×10^{-5}	8.68×10^{-4}	(a)	3.01×10^{-4}	2.10×10^{-4}
AX tank farm deep soil removal	2154	2161	200E	8.50×10^{-2}	1.14×10^{-2}	4.79×10^{-4}	1.45×10^{-2}	(a)	5.01×10^{-3}	3.49×10^{-3}
TX tank farm deep soil removal	2100	2107	200EW	2.68×10^{-1}	3.60×10^{-2}	1.51×10^{-3}	4.56×10^{-2}	(a)	1.58×10^{-2}	1.10×10^{-2}
U tank farm deep soil removal	2077	2084	200EW	1.40×10^{-1}	1.89×10^{-2}	7.91×10^{-4}	2.39×10^{-2}	(a)	8.27×10^{-3}	5.76×10^{-3}
SX tank farm deep soil removal	2054	2061	200W	3.42×10^{-1}	4.61×10^{-2}	1.93×10^{-3}	5.83×10^{-2}	(a)	2.02×10^{-2}	1.41×10^{-2}
Preprocessing Facility construction	2039	2041	200E	9.20×10^{-1}	2.03×10^{-1}	5.38×10^{-3}	1.77×10^{-1}	(a)	1.37	4.10×10^{-1}
Preprocessing Facility operations	2042	2162	200E	1.60×10^{-4}	9.12×10^{-6}	5.60×10^{-10}	3.20×10^{-8}	1.69×10^{-5}	1.38×10^{-6}	3.90×10^{-6}
Preprocessing Facility deactivation	2163	2163	200E	2.51×10^{-5}	1.43×10^{-6}	8.80×10^{-11}	5.03×10^{-9}	(a)	2.17×10^{-7}	6.13×10^{-7}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–27. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2142	200E	5.95×10^{1}	7.09×10^{1}	2.35×10^{2}	2.16×10^{-2}	6.45
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant original	2006	2017	WTP_AS	3.37×10^{2}	2.41×10^{2}	2.86×10^{2}	4.64×10^{-1}	3.29×10^{1}
Cesium and Strontium Capsule Processing Facility	2158	2161	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Tank risers	2013	2016	200EW	2.01×10^{1}	8.94	8.10×10^{-1}	1.88×10^{-3}	2.25
Double-shell tank replacement 1	2029	2034	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Double-shell tank replacement 2	2069	2074	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Double-shell tank replacement 3	2109	2114	200EW+	2.60×10^{2}	2.17×10^{2}	1.35×10^{3}	6.43×10^{-2}	2.20×10^{1}
Mobile retrieval system	2013	2162	200EW	2.73×10^{1}	1.19×10^{1}	2.28	3.80×10^{-3}	1.81
Vacuum-based retrieval system	2013	2162	200EW	5.79	2.62	5.26×10^{-1}	8.34×10^{-4}	3.94×10^{-1}
Chemical wash system	2013	2162	200EW	5.84×10^{-2}	3.12×10^{-1}	3.89×10^{-2}	9.74×10^{-5}	1.95×10^{-2}
HLW Melter Interim Storage Facility 1	2017	2018	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2037	2038	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 3	2057	2058	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 4	2077	2078	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 5	2097	2098	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 6	2117	2118	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 7	2137	2138	WTP_AS	6.17×10^{-1}	1.38	1.72×10^{1}	2.86×10^{-4}	6.73×10^{-2}
Underground transfer line replacement	2064	2064	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Waste Treatment Plant replacement 1	2067	2078	WTP_AS	3.30×10^{2}	2.36×10^{2}	2.34×10^{2}	4.54×10^{-1}	3.22×10^{1}
Waste Treatment Plant replacement 2	2127	2138	WTP_AS	3.30×10^{2}	2.36×10^{2}	2.34×10^{2}	4.54×10^{-1}	3.22×10^{1}
IHLW Shipping/Transfer Facility 1	2070	2072	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Shipping/Transfer Facility 2	2130	2132	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Module, additional	2074	2160	200E	6.07×10^{1}	7.23×10^{1}	2.40×10^{2}	2.20×10^{-2}	6.57
HLW Debris Storage Facilities	2041	2110	200EW	3.37×10^{-1}	1.56	1.10×10^{-1}	5.31×10^{-4}	1.28×10^{-1}

Table G–27. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction *(continued)*								
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 2	2053	2055	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 3	2083	2085	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 4	2113	2115	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 5	2143	2145	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 2	2040	2042	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 3	2065	2067	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 4	2090	2092	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 5	2115	2117	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Evaporator replacement 6	2140	2142	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Operations								
IHLW Interim Storage Facility	2018	2163	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2162	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2162	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2162	WTP_PS	2.71×10^{2}	5.32×10^{2}	2.08	1.07×10^{1}	9.91×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	WTP_PS	2.71×10^{2}	5.32×10^{2}	2.08	1.07×10^{1}	9.91×10^{2}
Cesium and Strontium Capsule Processing Facility	2162	2163	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Mobile retrieval system	2013	2162	200EW	1.26×10^{-1}	1.42×10^{-1}	(a)	(a)	5.02×10^{-2}
Vacuum-based retrieval system	2013	2162	200EW	3.95×10^{-2}	4.47×10^{-2}	(a)	(a)	1.58×10^{-2}
Chemical wash system	2013	2162	200EW	3.89×10^{-2}	1.36×10^{-1}	4.09×10^{-1}	3.87×10^{-5}	(a)
HLW Melter Interim Storage Facilities	2018	2262	WTP_AS	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2042	2153	200EW	(a)	(a)	(a)	(a)	(a)

Table G–27. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations *(continued)*								
Effluent Treatment Facility	2006	2166	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2018	2163	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2167	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Deactivation								
Mobile retrieval system	2013	2162	200EW	1.36×10^{1}	1.07	8.89×10^{-2}	3.27×10^{-4}	5.63×10^{-1}
Vacuum-based retrieval system	2013	2162	200EW	1.26×10^{-1}	9.89×10^{-3}	8.99×10^{-4}	3.02×10^{-6}	5.15×10^{-3}
Chemical wash system	2013	2162	200EW	5.39×10^{-1}	9.51×10^{-2}	8.02×10^{-3}	3.03×10^{-5}	2.56×10^{-2}
IHLW Interim Storage Facility	2078	2188	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2079	2081	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Waste Treatment Plant replacement 1	2139	2141	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Waste Treatment Plant replacement 2	2164	2166	WTP_AS	1.51×10^{1}	2.97×10^{1}	1.16×10^{-1}	5.95×10^{-1}	5.54×10^{1}
Cesium and Strontium Capsule Processing Facility	2164	2164	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 3	2116	2116	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 4	2146	2146	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 5	2167	2167	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
HLW Debris Storage Facilities	2154	2154	200EW	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2043	2043	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 2	2068	2068	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 3	2093	2093	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 4	2118	2118	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 5	2143	2143	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 6	2168	2168	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}

Table G–27. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure								
Containment structure construction 1	2038	2041	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 2	2061	2064	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 3	2084	2087	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 4	2107	2110	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 5	2122	2125	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 6	2138	2141	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation 1	2062	2064	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 2	2085	2087	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 3	2108	2110	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 4	2123	2125	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 5	2146	2148	200EW	4.52×10^{1}	4.70	1.55	1.46×10^{-3}	1.94
Containment structure deactivation 6	2138	2140	200EW	4.52×10^{1}	4.70	1.55	1.46×10^{-3}	1.94
Containment structure deactivation 7	2162	2164	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
B tank farm removal	2065	2076	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
T tank farm removal	2126	2137	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
BY tank farm removal	2111	2122	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
BX tank farm removal	2042	2053	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
C tank farm removal	2088	2099	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
A tank farm removal	2142	2153	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
AX tank farm removal	2142	2153	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
S tank farm removal	2126	2137	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
TY tank farm removal	2111	2122	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
TX tank farm removal	2088	2099	200EW	2.07×10^{1}	9.31×10^{1}	1.21×10^{1}	3.25×10^{-2}	7.63
U tank farm removal	2065	2076	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
SX tank farm removal	2042	2053	200EW	1.72×10^{1}	7.75×10^{1}	1.01×10^{1}	2.71×10^{-2}	6.35
B tank farm deep soil removal	2077	2084	200E	3.84	1.78×10^{1}	1.89	6.06×10^{-3}	1.46
T tank farm deep soil removal	2138	2145	200W	2.95×10^{1}	1.37×10^{2}	1.45×10^{1}	4.66×10^{-2}	1.12×10^{1}

Table G–27. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*								
BX tank farm deep soil removal	2054	2061	200E	1.23×10^{2}	5.71×10^{2}	6.04×10^{1}	1.94×10^{-1}	4.66×10^{1}
C tank farm deep soil removal	2100	2107	200E	2.33×10^{-1}	1.08	1.15×10^{-1}	3.68×10^{-4}	8.82×10^{-2}
A tank farm deep soil removal	2154	2161	200E	6.99×10^{-1}	3.24	3.43×10^{-1}	1.10×10^{-3}	2.65×10^{-1}
AX tank farm deep soil removal	2154	2161	200E	1.16×10^{1}	5.41×10^{1}	5.72	1.84×10^{-2}	4.41
TX tank farm deep soil removal	2100	2107	200EW	3.67×10^{1}	1.70×10^{2}	1.80×10^{1}	5.79×10^{-2}	1.39×10^{1}
U tank farm deep soil removal	2077	2084	200EW	1.92×10^{1}	8.92×10^{1}	9.44	3.03×10^{-2}	7.28
SX tank farm deep soil removal	2054	2061	200E	4.69×10^{1}	2.18×10^{2}	2.31×10^{1}	7.40×10^{-2}	1.78×10^{1}
B Area cribs and trenches (ditches) removal	2054	2084	200EW	5.41×10^{1}	2.51×10^{2}	2.66×10^{1}	8.54×10^{-2}	2.05×10^{1}
T Area cribs and trenches (ditches) removal	2100	2145	200EW	3.64×10^{1}	1.69×10^{2}	1.79×10^{1}	5.76×10^{-2}	1.38×10^{1}
B and T Area cribs and trenches (ditches) construction 1	2050	2053	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
B and T Area cribs and trenches (ditches) construction 2	2096	2099	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
B and T Area cribs and trenches (ditches) deactivation 1	2085	2087	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
B and T Area cribs and trenches (ditches) deactivation 2	2146	2148	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Preprocessing Facility construction	2039	2041	200E	1.58×10^{3}	1.14×10^{3}	3.41×10^{2}	2.18	1.55×10^{2}
Preprocessing Facility operations	2042	2162	200E	1.32	3.56	3.20×10^{-1}	8.05×10^{-1}	1.20
Preprocessing Facility deactivation	2163	2163	200E	2.07×10^{-1}	5.59×10^{-1}	5.03×10^{-2}	1.26×10^{-1}	1.89×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–28. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	WTP_AS	3.89×10^{-1}	8.63×10^{-2}	2.28×10^{-3}	7.49×10^{-2}	(a)	5.89×10^{-1}	1.75×10^{-1}
Cesium and Strontium Capsule Processing Facility	2158	2161	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Tank risers	2013	2016	200EW	2.38	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	200EW	1.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	3.42×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	1.43×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	WTP_AS	3.81×10^{-1}	8.45×10^{-2}	2.23×10^{-3}	7.33×10^{-2}	(a)	5.76×10^{-1}	1.72×10^{-1}
Waste Treatment Plant replacement 2	2127	2138	WTP_AS	3.81×10^{-1}	8.45×10^{-2}	2.23×10^{-3}	7.33×10^{-2}	(a)	5.76×10^{-1}	1.72×10^{-1}
IHLW Shipping/Transfer Facility 1	2070	2072	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Module, additional	2074	2160	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–28. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction *(continued)*										
HLW Debris Storage Facilities	2041	2110	200EW	2.46×10^{-3}	3.31×10^{-4}	1.39×10^{-5}	4.18×10^{-4}	(a)	1.45×10^{-4}	1.01×10^{-4}
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 2	2053	2055	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 3	2083	2085	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 4	2113	2115	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 5	2143	2145	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 2	2040	2042	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 3	2065	2067	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 4	2090	2092	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 5	2115	2117	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Evaporator replacement 6	2140	2142	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations										
IHLW Interim Storage Facility	2018	2163	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2162	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	WTP_PS	4.09	2.58×10^{-2}	9.32×10^{-6}	2.88×10^{-4}	1.26×10^{-2}	7.29×10^{-4}	2.45×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	WTP_PS	4.09	2.58×10^{-2}	1.35×10^{-3}	2.88×10^{-4}	(a)	7.29×10^{-4}	2.45×10^{-3}
Cesium and Strontium Capsule Processing Facility	2162	2163	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Mobile retrieval system	2013	2162	200EW	1.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	3.42×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	1.43×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–28. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations *(continued)*										
HLW Debris Storage Facilities	2042	2153	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	WTP_PS	4.54×10^{-3}	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2018	2163	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2167	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation										
Mobile retrieval system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2079	2081	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Waste Treatment Plant replacement 1	2139	2141	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Waste Treatment Plant replacement 2	2164	2166	WTP_AS	2.29×10^{-1}	1.44×10^{-3}	5.21×10^{-7}	1.61×10^{-5}	7.08×10^{-4}	4.07×10^{-5}	1.37×10^{-4}
Cesium and Strontium Capsule Processing Facility	2164	2164	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 3	2116	2116	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 4	2146	2146	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 5	2167	2167	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
HLW Debris Storage Facilities	2154	2154	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2043	2043	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 2	2068	2068	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 3	2093	2093	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 4	2118	2118	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 5	2143	2143	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 6	2168	2168	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}

Table G–28. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure										
Containment structure construction 1	2038	2041	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
T tank farm removal	2126	2137	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
BY tank farm removal	2111	2122	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
BX tank farm removal	2042	2053	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
C tank farm removal	2088	2099	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
A tank farm removal	2142	2153	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
AX tank farm removal	2142	2153	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
S tank farm removal	2126	2137	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
TY tank farm removal	2111	2122	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
TX tank farm removal	2088	2099	200EW	1.46×10^{-1}	1.98×10^{-2}	8.25×10^{-4}	2.49×10^{-2}	(a)	9.86×10^{-3}	6.36×10^{-3}
U tank farm removal	2065	2076	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
SX tank farm removal	2042	2053	200EW	1.22×10^{-1}	1.65×10^{-2}	6.88×10^{-4}	2.08×10^{-2}	(a)	8.22×10^{-3}	5.30×10^{-3}
B tank farm deep soil removal	2077	2084	200E	2.80×10^{-2}	3.77×10^{-3}	1.58×10^{-4}	4.77×10^{-3}	(a)	1.65×10^{-3}	1.15×10^{-3}

Table G–28. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*										
T tank farm deep soil removal	2138	2145	200W	2.15×10^{-1}	2.90×10^{-2}	1.21×10^{-3}	3.67×10^{-2}	(a)	1.27×10^{-2}	8.85×10^{-3}
BX tank farm deep soil removal	2054	2061	200E	8.97×10^{-1}	1.21×10^{-1}	5.06×10^{-3}	1.53×10^{-1}	(a)	5.29×10^{-2}	3.69×10^{-2}
C tank farm deep soil removal	2100	2107	200E	1.70×10^{-3}	2.29×10^{-4}	9.58×10^{-6}	2.89×10^{-4}	(a)	1.00×10^{-4}	6.99×10^{-5}
A tank farm deep soil removal	2154	2161	200E	5.10×10^{-3}	6.86×10^{-4}	2.88×10^{-5}	8.68×10^{-4}	(a)	3.01×10^{-4}	2.10×10^{-4}
AX tank farm deep soil removal	2154	2161	200E	8.50×10^{-2}	1.14×10^{-2}	4.79×10^{-4}	1.45×10^{-2}	(a)	5.01×10^{-3}	3.49×10^{-3}
TX tank farm deep soil removal	2100	2107	200EW	2.68×10^{-1}	3.60×10^{-2}	1.51×10^{-3}	4.56×10^{-2}	(a)	1.58×10^{-2}	1.10×10^{-2}
U tank farm deep soil removal	2077	2084	200EW	1.40×10^{-1}	1.89×10^{-2}	7.91×10^{-4}	2.39×10^{-2}	(a)	8.27×10^{-3}	5.76×10^{-3}
SX tank farm deep soil removal	2054	2061	200E	3.42×10^{-1}	4.61×10^{-2}	1.93×10^{-3}	5.83×10^{-2}	(a)	2.02×10^{-2}	1.41×10^{-2}
B Area cribs and trenches (ditches) removal	2054	2084	200EW	3.95×10^{-1}	5.31×10^{-2}	2.23×10^{-3}	6.72×10^{-2}	(a)	2.33×10^{-2}	1.62×10^{-2}
T Area cribs and trenches (ditches) removal	2100	2145	200EW	2.66×10^{-1}	3.58×10^{-2}	1.50×10^{-3}	4.53×10^{-2}	(a)	1.57×10^{-2}	1.09×10^{-2}
B and T Area cribs and trenches (ditches) construction 1	2050	2053	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) construction 2	2096	2099	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 1	2085	2087	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 2	2146	2148	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	200E	1.85	4.07×10^{-1}	1.08×10^{-2}	3.55×10^{-1}	(a)	2.76	8.22×10^{-1}
Preprocessing Facility operations	2042	2162	200E	5.62×10^{-4}	3.20×10^{-5}	1.97×10^{-9}	1.13×10^{-7}	(a)	4.85×10^{-6}	1.37×10^{-5}
Preprocessing Facility deactivation	2163	2163	200E	8.82×10^{-5}	5.04×10^{-6}	3.09×10^{-10}	1.77×10^{-8}	(a)	7.62×10^{-7}	2.15×10^{-6}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–29. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules, three additional	2014	2024	200E	3.82×10^{1}	4.55×10^{1}	1.51×10^{2}	1.39×10^{-2}	4.14
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	1.85×10^{2}	4.09×10^{1}	1.65×10^{2}	2.50×10^{-1}	1.15×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	2.01×10^{1}	8.94	8.10×10^{-1}	1.88×10^{-3}	2.25
Mobile retrieval system	2013	2043	200EW	8.69×10^{1}	3.77×10^{1}	7.25	1.21×10^{-2}	5.75
Vacuum-based retrieval system	2013	2043	200EW	3.24×10^{1}	1.46×10^{1}	2.94	4.66×10^{-3}	2.20
Chemical wash system	2013	2043	200EW	2.19×10^{-1}	1.17	1.46×10^{-1}	3.66×10^{-4}	7.32×10^{-2}
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 2	2053	2055	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 3	2083	2085	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	1.02	4.72	4.32×10^{1}	1.55×10^{-3}	3.86×10^{-1}
HLW Debris Storage Facilities	2021	2090	200EW	3.37×10^{-1}	1.56	1.10×10^{-1}	5.31×10^{-4}	1.28×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–29. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2043	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2043	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2043	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Mobile retrieval system	2013	2043	200EW	3.99×10^{-1}	4.53×10^{-1}	(a)	(a)	1.60×10^{-1}
Vacuum-based retrieval system	2013	2043	200EW	2.21×10^{-1}	2.50×10^{-1}	(a)	(a)	8.83×10^{-2}
Chemical wash system	2013	2043	200EW	1.46×10^{-1}	5.12×10^{-1}	1.54	1.45×10^{-4}	(a)
HLW Melter Interim Storage Facilities	2018	2199	WTP_AS	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2043	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	1.56×10^{-1}
Borrow Area C	2006	2102	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	200EW	(a)	(a)	(a)	(a)	(a)
Deactivation								
Mobile retrieval system	2013	2043	200EW	4.34×10^{1}	3.40	2.83×10^{-1}	1.04×10^{-3}	1.79
Vacuum-based retrieval system	2013	2043	200EW	7.05×10^{-1}	5.53×10^{-2}	5.03×10^{-3}	1.69×10^{-5}	2.88×10^{-2}
Chemical wash system	2013	2043	200EW	2.03	3.57×10^{-1}	3.01×10^{-2}	1.14×10^{-4}	9.62×10^{-2}
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	2.36×10^{1}	5.24×10^{1}	9.08×10^{-1}	2.69	8.56×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 3	2101	2101	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47

Table G–29. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
HLW Debris Storage Facilities	2089	2089	200W	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2044	2044	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Containment structure construction 1	2019	2022	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 2	2019	2022	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 3	2046	2049	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 4	2046	2049	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 5	2073	2076	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 6	2073	2076	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation 1	2043	2045	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 2	2043	2045	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 3	2070	2072	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 4	2062	2064	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 5	2089	2091	200EW	4.52×10^{1}	4.70	1.55	1.46×10^{-3}	1.94
Containment structure deactivation 6	2097	2099	200EW	4.52×10^{1}	4.70	1.55	1.46×10^{-3}	1.94
Containment structure deactivation 7	2097	2099	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	200EW	1.72×10^{3}	1.57×10^{3}	3.65×10^{3}	2.38	1.93×10^{2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
B tank farm removal	2023	2034	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
T tank farm removal	2077	2088	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
BY tank farm removal	2050	2061	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
BX tank farm removal	2023	2034	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
C tank farm removal	2050	2061	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
A tank farm removal	2077	2088	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
AX tank farm removal	2077	2088	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
S tank farm removal	2077	2088	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08

Table G–29. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*								
TY tank farm removal	2050	2061	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
TX tank farm removal	2050	2061	200EW	2.07×10^{1}	9.31×10^{1}	1.21×10^{1}	3.25×10^{-2}	7.63
U tank farm removal	2023	2034	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
SX tank farm removal	2023	2034	200EW	1.72×10^{1}	7.75×10^{1}	1.01×10^{1}	2.71×10^{-2}	6.35
B tank farm deep soil removal	2035	2042	200E	3.84	1.78×10^{1}	1.89	6.06×10^{-3}	1.46
T tank farm deep soil removal	2089	2096	200W	2.95×10^{1}	1.37×10^{2}	1.45×10^{1}	4.66×10^{-2}	1.12×10^{1}
BX tank farm deep soil removal	2035	2042	200E	1.23×10^{2}	5.71×10^{2}	6.04×10^{1}	1.94×10^{-1}	4.66×10^{1}
C tank farm deep soil removal	2062	2069	200E	2.33×10^{-1}	1.08	1.15×10^{-1}	3.68×10^{-4}	8.82×10^{-2}
A tank farm deep soil removal	2089	2096	200E	6.99×10^{-1}	3.24	3.43×10^{-1}	1.10×10^{-3}	2.65×10^{-1}
AX tank farm deep soil removal	2089	2096	200E	1.16×10^{1}	5.41×10^{1}	5.72	1.84×10^{-2}	4.41
TX tank farm deep soil removal	2062	2069	200EW	3.67×10^{1}	1.70×10^{2}	1.80×10^{1}	5.79×10^{-2}	1.39×10^{1}
U tank farm deep soil removal	2035	2042	200EW	1.92×10^{1}	8.92×10^{1}	9.44	3.03×10^{-2}	7.28
SX tank farm deep soil removal	2035	2042	200W	4.69×10^{1}	2.18×10^{2}	2.31×10^{1}	7.40×10^{-2}	1.78×10^{1}
Preprocessing Facility construction	2020	2022	200E	7.88×10^{2}	5.70×10^{2}	1.71×10^{2}	1.08	7.74×10^{1}
Preprocessing Facility operation	2023	2099	200E	5.56×10^{-1}	2.40×10^{-1}	2.22×10^{-2}	6.62×10^{-2}	5.38×10^{-1}
Preprocessing Facility deactivation	2100	2100	200E	5.56×10^{-2}	2.40×10^{-2}	2.22×10^{-3}	6.62×10^{-3}	5.38×10^{-2}
Postclosure care	2102	2201	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–30. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	7.08×10^{-2}	3.05×10^{-2}	4.50×10^{-4}	1.74×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.38	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	200EW	3.46×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	1.91×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	5.37×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 2	2053	2055	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 3	2083	2085	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	7.42×10^{-3}	9.99×10^{-4}	(a)	(a)	(a)	4.38×10^{-4}	3.06×10^{-4}
HLW Debris Storage Facilities	2021	2090	200EW	2.46×10^{-3}	3.31×10^{-4}	1.39×10^{-5}	4.18×10^{-4}	(a)	1.45×10^{-4}	1.01×10^{-4}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–30. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2043	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	6.97×10^{-2}	6.27×10^{-4}	2.11×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	(a)	6.27×10^{-4}	2.11×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Mobile retrieval system	2013	2043	200EW	3.46×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	1.91×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	5.37×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	WTP_PS	1.44	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2043	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2102	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Mobile retrieval system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	3.53×10^{-1}	2.23×10^{-3}	8.05×10^{-7}	2.49×10^{-5}	9.06×10^{-2}	6.27×10^{-5}	2.11×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}

Table G–30. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 3	2101	2101	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
HLW Debris Storage Facilities	2089	2089	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement	2044	2044	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Closure										
Containment structure construction 1	2019	2022	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2019	2022	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2046	2049	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2046	2049	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2073	2076	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2073	2076	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2043	2045	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2070	2072	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2062	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2089	2091	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2097	2099	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2097	2099	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	200EW	2.53	5.04×10^{-1}	1.46×10^{-2}	4.72×10^{-1}	(a)	2.88	8.74×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
T tank farm removal	2077	2088	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
Removal of BY tank farm	2050	2061	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
BX tank farm removal	2023	2034	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
C tank farm removal	2050	2061	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}

Table G–30. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*										
A tank farm removal	2077	2088	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
AX tank farm removal	2077	2088	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
S tank farm removal	2077	2088	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
TY tank farm removal	2050	2061	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
TX tank farm removal	2050	2061	200EW	1.46×10^{-1}	1.98×10^{-2}	8.25×10^{-4}	2.49×10^{-2}	(a)	9.86×10^{-3}	6.36×10^{-3}
U tank farm removal	2023	2034	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
SX tank farm removal	2023	2034	200EW	1.22×10^{-1}	1.65×10^{-2}	6.88×10^{-4}	2.08×10^{-2}	(a)	8.22×10^{-3}	5.30×10^{-3}
B tank farm deep soil removal	2035	2042	200E	2.80×10^{-2}	3.77×10^{-3}	1.58×10^{-4}	4.77×10^{-3}	(a)	1.65×10^{-3}	1.15×10^{-3}
T tank farm deep soil removal	2089	2096	200W	2.15×10^{-1}	2.90×10^{-2}	1.21×10^{-3}	3.67×10^{-2}	(a)	1.27×10^{-2}	8.85×10^{-3}
BX tank farm deep soil removal	2035	2042	200E	8.97×10^{-1}	1.21×10^{-1}	5.06×10^{-3}	1.53×10^{-1}	(a)	5.29×10^{-2}	3.69×10^{-2}
C tank farm deep soil removal	2062	2069	200E	1.70×10^{-3}	2.29×10^{-4}	9.58×10^{-6}	2.89×10^{-4}	(a)	1.00×10^{-4}	6.99×10^{-5}
A tank farm deep soil removal	2089	2096	200E	5.10×10^{-3}	6.86×10^{-4}	2.88×10^{-5}	8.68×10^{-4}	(a)	3.01×10^{-4}	2.10×10^{-4}
AX tank farm deep soil removal	2089	2096	200E	8.50×10^{-2}	1.14×10^{-2}	4.79×10^{-4}	1.45×10^{-2}	(a)	5.01×10^{-3}	3.49×10^{-3}
TX tank farm deep soil removal	2062	2069	200EW	2.68×10^{-1}	3.60×10^{-2}	1.51×10^{-3}	4.56×10^{-2}	(a)	1.58×10^{-2}	1.10×10^{-2}
U tank farm deep soil removal	2035	2042	200EW	1.40×10^{-1}	1.89×10^{-2}	7.91×10^{-4}	2.39×10^{-2}	(a)	8.27×10^{-3}	5.76×10^{-3}
SX tank farm deep soil removal	2035	2042	200W	3.42×10^{-1}	4.61×10^{-2}	1.93×10^{-3}	5.83×10^{-2}	(a)	2.02×10^{-2}	1.41×10^{-2}
Preprocessing Facility construction	2020	2022	200E	9.20×10^{-1}	2.03×10^{-1}	5.38×10^{-3}	1.77×10^{-1}	(a)	1.37	4.10×10^{-1}
Preprocessing Facility operations	2023	2099	200E	2.51×10^{-4}	1.43×10^{-5}	8.80×10^{-10}	5.03×10^{-8}	2.65×10^{-5}	2.17×10^{-6}	6.13×10^{-6}
Preprocessing Facility deactivation	2100	2100	200E	2.51×10^{-5}	1.43×10^{-6}	8.80×10^{-11}	5.03×10^{-9}	(a)	2.17×10^{-7}	6.13×10^{-7}
Postclosure care	2102	2201	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–31. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	1.28	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules, three additional	2014	2024	200E	3.82×10^{1}	4.55×10^{1}	1.51×10^{2}	1.39×10^{-2}	4.14
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	1.85×10^{2}	4.09×10^{1}	1.65×10^{2}	2.50×10^{-1}	1.15×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	2.01×10^{1}	8.94	8.10×10^{-1}	1.88×10^{-3}	2.25
Mobile retrieval system	2013	2043	200EW	8.69×10^{1}	3.77×10^{1}	7.25	1.21×10^{-2}	5.75
Vacuum-based retrieval system	2013	2043	200EW	3.24×10^{1}	1.46×10^{1}	2.94	4.66×10^{-3}	2.20
Chemical wash system	2013	2043	200EW	2.19×10^{-1}	1.17	1.46×10^{-1}	3.66×10^{-4}	7.32×10^{-2}
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 2	2053	2055	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Effluent Treatment Facility replacement 3	2083	2085	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	4.51×10^{2}	6.53×10^{1}	1.76×10^{1}	6.07×10^{-1}	2.56×10^{1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	1.02	4.72	4.32×10^{1}	1.55×10^{-3}	3.86×10^{-1}
HLW Debris Storage Facilities	2021	2090	200EW	3.37×10^{-1}	1.56	1.10×10^{-1}	5.31×10^{-4}	1.28×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47

Table G–31. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2043	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2043	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2043	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Mobile retrieval system	2013	2043	200EW	3.99×10^{-1}	4.53×10^{-1}	(a)	(a)	1.60×10^{-1}
Vacuum-based retrieval system	2013	2043	200EW	2.21×10^{-1}	2.50×10^{-1}	(a)	(a)	8.83×10^{-2}
Chemical wash system	2013	2043	200EW	1.46×10^{-1}	5.12×10^{-1}	1.54	1.45×10^{-4}	(a)
HLW Melter Interim Storage Facilities	2018	2199	WTP_AS	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2043	200E	1.21×10^{1}	5.60×10^{1}	1.70×10^{1}	1.90×10^{-2}	4.57
Borrow Area C	2006	2102	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	200EW	(a)	(a)	(a)	(a)	(a)
Deactivation								
Mobile retrieval system	2013	2043	200EW	4.34×10^{1}	3.40	2.83×10^{-1}	1.04×10^{-3}	1.79
Vacuum-based retrieval system	2013	2043	200EW	7.05×10^{-1}	5.53×10^{-2}	5.03×10^{-3}	1.69×10^{-5}	2.88×10^{-2}
Chemical wash system	2013	2043	200EW	2.03	3.57×10^{-1}	3.01×10^{-2}	1.14×10^{-4}	9.62×10^{-2}
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	2.36×10^{1}	5.24×10^{1}	9.08×10^{-1}	2.69	8.56×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 3	2101	2101	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47

Table G–31. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*								
HLW Debris Storage Facilities	2089	2089	200EW	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement	2044	2044	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Closure								
Containment structure construction 1	2019	2022	200EW	1.36×10^{2}	1.41×10^{1}	5.48	4.38×10^{-3}	5.81
Containment structure construction 2	2046	2049	200EW	1.36×10^{2}	1.41×10^{1}	5.48	4.38×10^{-3}	5.81
Containment structure construction 3	2073	2076	200EW	1.36×10^{2}	1.41×10^{1}	5.48	4.38×10^{-3}	5.81
Containment structure deactivation 1	2043	2045	200EW	1.81×10^{2}	1.88×10^{1}	6.19	5.84×10^{-3}	7.75
Containment structure deactivation 2	2070	2072	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 3	2062	2064	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 4	2089	2091	200EW	4.52×10^{1}	4.70	1.55	2.92×10^{-1}	1.94
Containment structure deactivation 5	2097	2099	200EW	1.36×10^{2}	1.41×10^{1}	4.64	8.77×10^{-1}	5.81
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}
B tank farm removal	2023	2034	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
T tank farm removal	2077	2088	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
BY tank farm removal	2050	2061	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
BX tank farm removal	2023	2034	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
C tank farm removal	2050	2061	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
A tank farm removal	2077	2088	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
AX tank farm removal	2077	2088	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
S tank farm removal	2077	2088	200EW	1.38×10^{1}	6.20×10^{1}	8.04	2.17×10^{-2}	5.08
TY tank farm removal	2050	2061	200EW	6.89	3.10×10^{1}	4.02	1.08×10^{-2}	2.54
TX tank farm removal	2050	2061	200EW	2.07×10^{1}	9.31×10^{1}	1.21×10^{1}	3.25×10^{-2}	7.63
U tank farm removal	2023	2034	200EW	1.84×10^{1}	8.27×10^{1}	1.07×10^{1}	2.89×10^{-2}	6.78
SX tank farm removal	2023	2034	200EW	1.72×10^{1}	7.75×10^{1}	1.01×10^{1}	2.71×10^{-2}	6.35
B tank farm deep soil removal	2035	2042	200E	3.84	1.78×10^{1}	1.89	6.06×10^{-3}	1.46
T tank farm deep soil removal	2089	2096	200W	2.95×10^{1}	1.37×10^{2}	1.45×10^{1}	4.66×10^{-2}	1.12×10^{1}
BX tank farm deep soil removal	2035	2042	200E	1.23×10^{2}	5.71×10^{2}	6.04×10^{1}	1.94×10^{-1}	4.66×10^{1}

Table G–31. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*								
C tank farm deep soil removal	2062	2069	200E	2.33×10^{-1}	1.08	1.15×10^{-1}	3.68×10^{-4}	8.82×10^{-2}
A tank farm deep soil removal	2089	2096	200E	6.99×10^{-1}	3.24	3.43×10^{-1}	1.10×10^{-3}	2.65×10^{-1}
AX tank farm deep soil removal	2089	2096	200E	1.16×10^{1}	5.41×10^{1}	5.72	1.84×10^{-2}	4.41
TX tank farm deep soil removal	2062	2069	200EW	3.67×10^{1}	1.70×10^{2}	1.80×10^{1}	5.79×10^{-2}	1.39×10^{1}
U tank farm deep soil removal	2035	2042	200EW	1.92×10^{1}	8.92×10^{1}	9.44	3.03×10^{-2}	7.28
SX tank farm deep soil removal	2035	2042	200W	4.69×10^{1}	2.18×10^{2}	2.31×10^{1}	7.40×10^{-2}	1.78×10^{1}
B Area cribs and trenches (ditches) removal	2035	2061	200EW	6.21×10^{1}	2.88×10^{2}	3.05×10^{1}	9.81×10^{-2}	2.35×10^{1}
T Area cribs and trenches (ditches) removal	2062	2096	200EW	4.79×10^{1}	2.22×10^{2}	2.35×10^{1}	7.56×10^{-2}	1.82×10^{1}
Containment structure construction 1	2029	2032	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure construction 2	2056	2059	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
Containment structure deactivation 1	2062	2064	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Containment structure deactivation 2	2097	2099	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Preprocessing Facility construction	2020	2022	200E	1.58×10^{3}	1.14×10^{3}	3.41×10^{2}	2.18	1.55×10^{2}
Preprocessing Facility operations	2023	2099	200E	2.07	5.59	5.03×10^{-1}	1.26	1.89
Preprocessing Facility deactivation	2100	2100	200E	2.07×10^{-1}	5.59×10^{-1}	5.03×10^{-2}	1.26×10^{-1}	1.89×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–32. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	1.31	3.93×10^{-1}
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	7.08×10^{-2}	3.05×10^{-2}	4.50×10^{-4}	1.74×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.38	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	200EW	3.46×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	1.91×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	5.37×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 2	2053	2055	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Effluent Treatment Facility replacement 3	2083	2085	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	1.19×10^{-1}	6.80×10^{-2}	7.95×10^{-4}	3.35×10^{-2}	(a)	8.74×10^{-1}	2.49×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	7.42×10^{-3}	9.99×10^{-4}	(a)	(a)	(a)	4.38×10^{-4}	3.06×10^{-4}
HLW Debris Storage Facilities	2021	2090	200EW	2.46×10^{-3}	3.31×10^{-4}	1.39×10^{-5}	4.18×10^{-4}	(a)	1.45×10^{-4}	1.01×10^{-4}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–32. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2043	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	6.97×10^{-2}	6.27×10^{-4}	2.11×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	(a)	6.27×10^{-4}	2.11×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Mobile retrieval system	2013	2043	200EW	3.46×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	1.91×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	5.37×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	WTP_PS	1.44	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2043	200E	8.80×10^{-2}	1.18×10^{-2}	4.96×10^{-4}	1.50×10^{-2}	(a)	5.19×10^{-3}	3.62×10^{-3}
Borrow Area C	2006	2102	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Mobile retrieval system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	3.53×10^{-1}	2.23×10^{-3}	8.05×10^{-7}	2.49×10^{-5}	9.06×10^{-2}	6.27×10^{-5}	2.11×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}

Table G–32. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Effluent Treatment Facility replacement 1	2056	2056	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 2	2086	2086	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 3	2101	2101	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
HLW Debris Storage Facility	2089	2089	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement	2044	2044	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Closure										
Containment structure construction 1	2019	2022	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2046	2049	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2073	2076	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2070	2072	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2062	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2089	2091	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2097	2099	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
T tank farm removal	2077	2088	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
BY tank farm removal	2050	2061	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
BX tank farm removal	2023	2034	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
C tank farm removal	2050	2061	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
A tank farm removal	2077	2088	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
AX tank farm removal	2077	2088	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}
S tank farm removal	2077	2088	200EW	9.76×10^{-2}	1.32×10^{-2}	5.50×10^{-4}	1.66×10^{-2}	(a)	6.58×10^{-3}	4.24×10^{-3}
TY tank farm removal	2050	2061	200EW	4.88×10^{-2}	6.59×10^{-3}	2.75×10^{-4}	8.31×10^{-3}	(a)	3.29×10^{-3}	2.12×10^{-3}
TX tank farm removal	2050	2061	200EW	1.46×10^{-1}	1.98×10^{-2}	8.25×10^{-4}	2.49×10^{-2}	(a)	9.86×10^{-3}	6.36×10^{-3}
U tank farm removal	2023	2034	200EW	1.30×10^{-1}	1.76×10^{-2}	7.34×10^{-4}	2.22×10^{-2}	(a)	8.77×10^{-3}	5.65×10^{-3}

Table G–32. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*										
SX tank farm removal	2023	2034	200EW	1.22×10^{-1}	1.65×10^{-2}	6.88×10^{-4}	2.08×10^{-2}	(a)	8.22×10^{-3}	5.30×10^{-3}
B tank farm deep soil removal	2035	2042	200E	2.80×10^{-2}	3.77×10^{-3}	1.58×10^{-4}	4.77×10^{-3}	(a)	1.65×10^{-3}	1.15×10^{-3}
T tank farm deep soil removal	2089	2096	200W	2.15×10^{-1}	2.90×10^{-2}	1.21×10^{-3}	3.67×10^{-2}	(a)	1.27×10^{-2}	8.85×10^{-3}
BX tank farm deep soil removal	2035	2042	200E	8.97×10^{-1}	1.21×10^{-1}	5.06×10^{-3}	1.53×10^{-1}	(a)	5.29×10^{-2}	3.69×10^{-2}
C tank farm deep soil removal	2062	2069	200E	1.70×10^{-3}	2.29×10^{-4}	9.58×10^{-6}	2.89×10^{-4}	(a)	1.00×10^{-4}	6.99×10^{-5}
A tank farm deep soil removal	2089	2096	200E	5.10×10^{-3}	6.86×10^{-4}	2.88×10^{-5}	8.68×10^{-4}	(a)	3.01×10^{-4}	2.10×10^{-4}
AX tank farm deep soil removal	2089	2096	200E	8.50×10^{-2}	1.14×10^{-2}	4.79×10^{-4}	1.45×10^{-2}	(a)	5.01×10^{-3}	3.49×10^{-3}
TX tank farm deep soil removal	2062	2069	200EW	2.68×10^{-1}	3.60×10^{-2}	1.51×10^{-3}	4.56×10^{-2}	(a)	1.58×10^{-2}	1.10×10^{-2}
U tank farm deep soil removal	2035	2042	200EW	1.40×10^{-1}	1.89×10^{-2}	7.91×10^{-4}	2.39×10^{-2}	(a)	8.27×10^{-3}	5.76×10^{-3}
SX tank farm deep soil removal	2035	2042	200W	3.42×10^{-1}	4.61×10^{-2}	1.93×10^{-3}	5.83×10^{-2}	(a)	2.02×10^{-2}	1.41×10^{-2}
B Area cribs and trenches (ditches) removal	2035	2061	200EW	4.53×10^{-1}	6.10×10^{-2}	2.56×10^{-3}	7.71×10^{-2}	(a)	2.67×10^{-2}	1.86×10^{-2}
T Area cribs and trenches (ditches) removal	2062	2096	200EW	3.50×10^{-1}	4.70×10^{-2}	1.97×10^{-3}	5.95×10^{-2}	(a)	2.06×10^{-2}	1.44×10^{-2}
Containment structure construction 1	2029	2032	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2056	2059	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2097	2099	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	200E	1.85	4.07×10^{-1}	1.08×10^{-2}	3.55×10^{-1}	(a)	2.76	8.22×10^{-1}
Preprocessing Facility operations	2023	2099	200E	8.82×10^{-4}	5.04×10^{-5}	3.09×10^{-9}	1.77×10^{-7}	(a)	7.62×10^{-6}	2.15×10^{-5}
Preprocessing Facility deactivation	2100	2100	200E	8.82×10^{-5}	5.04×10^{-6}	3.09×10^{-10}	1.77×10^{-8}	(a)	7.62×10^{-7}	2.15×10^{-6}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–33. Tank Closure Alternative 6C Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Canister Storage Building	2006	2016	200E	5.54	2.86×10^{-1}	9.05×10^{-1}	4.02×10^{-4}	2.86×10^{-1}
IHLW Shipping/Transfer Facility	2011	2013	200E	5.68×10^{1}	6.72×10^{1}	9.81×10^{1}	2.18×10^{-2}	6.50
IHLW Interim Storage Modules	2014	2024	200E	3.82×10^{1}	4.55×10^{1}	1.51×10^{2}	1.39×10^{-2}	4.14
Other infrastructure upgrades	2006	2034	200EW	1.11	8.05×10^{-1}	1.13	2.54×10^{-4}	9.43×10^{-2}
Tank upgrades	2006	2025	200EW	3.49×10^{2}	4.41×10^{1}	8.07	1.38×10^{-2}	1.56×10^{1}
Waste Treatment Plant	2006	2017	WTP_AS	7.64×10^{2}	6.20×10^{2}	4.16×10^{2}	1.05	7.99×10^{1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	7.59×10^{1}	2.71×10^{1}	2.41×10^{1}	8.75×10^{-3}	4.47
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	1.85×10^{2}	4.09×10^{1}	1.65×10^{2}	2.50×10^{-1}	1.15×10^{1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	8.41×10^{2}	1.22×10^{2}	1.80×10^{1}	1.13	4.78×10^{1}
Waste receiver facilities	2013	2017	200EW	1.15×10^{2}	9.65×10^{1}	3.31×10^{2}	2.92×10^{-2}	9.94
Tank risers	2013	2016	200EW	1.84×10^{1}	8.19	7.42×10^{-1}	1.72×10^{-3}	2.06
Modified sluicing retrieval system	2013	2043	200EW	6.69×10^{1}	2.58	1.43	6.19×10^{-4}	2.62
Mobile retrieval system	2013	2028	200EW	6.27×10^{1}	2.72×10^{1}	5.24	8.72×10^{-3}	4.15
Vacuum-based retrieval system	2029	2043	200EW	6.69×10^{1}	3.03×10^{1}	6.08	9.64×10^{-3}	4.55
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	6.17×10^{-1}	1.39	1.72×10^{1}	2.87×10^{-4}	6.73×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	200E	1.45×10^{3}	2.09×10^{2}	9.48×10^{2}	1.96	8.25×10^{1}
Evaporator replacement 1	2015	2017	200E	8.47×10^{1}	1.59×10^{1}	1.42×10^{1}	1.14×10^{-1}	5.07
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	1.02	4.72	4.32×10^{1}	1.55×10^{-3}	3.86×10^{-1}

Table G–33. Tank Closure Alternative 6C Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.36×10^{1}	1.55×10^{1}	(a)	(a)	5.40
Retrieval operations	2006	2043	200EW	4.72×10^{-2}	5.35×10^{-2}	(a)	(a)	1.89×10^{-2}
Double-shell tank interim stabilization	2006	2043	200EW	3.09×10^{-1}	3.51×10^{-1}	(a)	(a)	1.24×10^{-1}
Waste Treatment Plant	2018	2043	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	2.36×10^{2}	5.24×10^{2}	9.08	2.69×10^{1}	8.56×10^{2}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	4.85×10^{1}	1.29	5.53×10^{1}	6.49×10^{-2}	2.34
Modified sluicing retrieval system	2013	2043	200EW	1.86×10^{1}	1.15	8.87×10^{-2}	2.96×10^{-4}	7.98×10^{-1}
Mobile retrieval system	2013	2028	200EW	2.88×10^{-1}	3.27×10^{-1}	(a)	(a)	1.15×10^{-1}
Vacuum-based retrieval system	2029	2043	200EW	4.56×10^{-1}	5.17×10^{-1}	(a)	(a)	1.82×10^{-1}
HLW Melter Interim Storage Facilities	2018	2145	WTP_AS	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	WTP_PS	9.84	2.67	9.34×10^{2}	1.33×10^{-2}	6.48×10^{-1}
Evaporator	2006	2043	200E	1.23×10^{1}	5.70×10^{1}	1.71×10^{1}	1.94×10^{-2}	4.66
Borrow Area C	2006	2052	Area C	8.52×10^{1}	1.12×10^{2}	2.30×10^{2}	1.20×10^{-1}	1.20×10^{1}
Immobilized Low-Activity Waste Interim Storage Facility	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)
Deactivation								
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	2.36×10^{1}	5.24×10^{1}	9.08×10^{-1}	2.69	8.56×10^{1}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	2.24×10^{1}	5.96×10^{-1}	2.55×10^{1}	3.00×10^{-2}	1.08
Effluent Treatment Facility original	2026	2026	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Effluent Treatment Facility replacement 1	2046	2046	WTP_AS	1.09×10^{2}	4.78×10^{1}	4.70×10^{2}	1.48×10^{-1}	8.47
Evaporator original	2018	2018	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Evaporator replacement 1	2044	2044	200E	1.66	7.70	7.07	2.62×10^{-3}	6.28×10^{-1}
Modified sluicing retrieval system	2013	2043	200EW	4.76×10^{1}	2.01	1.77×10^{-1}	5.91×10^{-4}	1.83
Mobile retrieval system	2013	2028	200EW	3.13×10^{1}	2.45	2.04×10^{-1}	7.50×10^{-4}	1.29
Vacuum-based retrieval system	2029	2043	200EW	1.46	1.14×10^{-1}	1.04×10^{-2}	3.49×10^{-5}	5.96×10^{-2}
Closure								
Ancillary equipment grouting	2013	2037	200EW	3.46×10^{-1}	1.50	1.63	4.82×10^{-4}	1.16×10^{-1}
Ancillary equipment removal	2032	2037	200EW	3.28	1.50×10^{1}	4.40×10^{1}	4.92×10^{-3}	1.19
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	2.53	9.81	8.56	3.22×10^{-3}	7.93×10^{-1}

Table G–33. Tank Closure Alternative 6C Criteria Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*								
Grout facility (tank-filling) construction	2032	2033	200EW	2.18	8.29	4.20	2.71×10^{-3}	6.82×10^{-1}
Grout facility (tank-filling) operations	2034	2043	200EW	2.25×10^{1}	8.32×10^{1}	4.51×10^{1}	2.70×10^{-2}	6.68
Grout facility (tank-filling) deactivation	2044	2044	200EW	1.45	3.41	2.10×10^{1}	1.12×10^{-3}	2.95×10^{-1}
Containment structure construction	2028	2031	200EW	6.78×10^{1}	7.06	2.74	2.19×10^{-3}	2.91
BX and SX tank farm deep soil removal	2032	2037	200EW	3.99×10^{1}	1.13×10^{2}	2.56×10^{2}	3.73×10^{-2}	9.55
Containment structure deactivation	2038	2040	200EW	9.03×10^{1}	9.39	3.09	2.92×10^{-3}	3.88
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	200EW	1.64×10^{3}	1.50×10^{3}	3.48×10^{3}	2.27	1.83×10^{2}
Postclosure care	2046	2145	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–34. Tank Closure Alternative 6C Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Canister Storage Building	2006	2016	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	200EW	7.82×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	WTP_AS	9.98×10^{-1}	2.09×10^{-1}	5.81×10^{-3}	1.89×10^{-1}	(a)	3.93×10^{-1}	3.93×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	200EW+	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility expansion	2008	2017	200E	7.08×10^{-2}	3.05×10^{-2}	4.50×10^{-4}	1.74×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	WTP_AS	2.22×10^{-1}	1.27×10^{-1}	1.49×10^{-3}	6.26×10^{-2}	(a)	1.63	4.64×10^{-1}
Waste receiver facilities	2013	2017	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	200EW	2.18	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	200EW	2.17×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	200EW	2.50×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	3.95×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	200E	3.81×10^{-1}	2.19×10^{-1}	2.55×10^{-3}	1.08×10^{-1}	(a)	2.82	8.02×10^{-1}
Evaporator replacement 1	2015	2017	200E	2.79×10^{-2}	1.34×10^{-2}	1.81×10^{-4}	7.23×10^{-3}	(a)	1.63×10^{-1}	4.65×10^{-2}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	WTP_AS	7.42×10^{-3}	9.99×10^{-4}	(a)	(a)	(a)	4.38×10^{-4}	3.06×10^{-4}

Table G–34. Tank Closure Alternative 6C Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
IHLW Interim Storage Facility	2018	2040	200E	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	200EW	1.18×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2043	200EW	4.09×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	200EW	2.68×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	6.97×10^{-2}	6.27×10^{-4}	2.11×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	WTP_PS	3.53	2.23×10^{-2}	8.05×10^{-6}	2.49×10^{-4}	(a)	6.27×10^{-4}	2.11×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	WTP_AS	3.80×10^{-3}	6.24×10^{-3}	3.53×10^{-5}	2.11×10^{-3}	(a)	9.58×10^{-2}	2.70×10^{-2}
Modified sluicing retrieval system	2013	2043	200EW	2.17×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	200EW	2.50×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	3.95×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	WTP_PS	1.44	1.71×10^{-3}	2.83×10^{-5}	1.05×10^{-3}	(a)	1.86×10^{-2}	5.35×10^{-3}
Evaporator	2006	2043	200E	8.97×10^{-2}	1.21×10^{-2}	5.06×10^{-4}	1.53×10^{-2}	(a)	5.29×10^{-3}	3.69×10^{-3}
Borrow Area C	2006	2052	Area C	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Immobilized Low-Activity Waste Interim Storage Facility	2018	2043	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
IHLW Interim Storage Facility	2041	2041	WTP_AS	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	WTP_AS	3.53×10^{-1}	2.23×10^{-3}	8.05×10^{-7}	2.49×10^{-5}	9.06×10^{-2}	6.27×10^{-5}	2.11×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	WTP_AS	1.75×10^{-3}	2.88×10^{-3}	1.63×10^{-5}	9.76×10^{-4}	(a)	4.42×10^{-2}	1.25×10^{-2}
Effluent Treatment Facility original	2026	2026	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Effluent Treatment Facility replacement 1	2046	2046	WTP_AS	7.88×10^{-2}	2.23×10^{-2}	4.73×10^{-4}	1.64×10^{-2}	(a)	2.00×10^{-1}	5.81×10^{-2}
Evaporator original	2018	2018	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Evaporator replacement 1	2044	2044	200E	1.21×10^{-2}	1.63×10^{-3}	6.82×10^{-5}	2.06×10^{-3}	(a)	7.14×10^{-4}	4.97×10^{-4}
Modified sluicing retrieval system	2013	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–34. Tank Closure Alternative 6C Toxic Pollutant Emissions *(continued)*

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*										
Mobile retrieval system	2013	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure										
Ancillary equipment grouting	2013	2037	200EW	2.69×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	200EW	1.72×10^{-5}	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) construction	2032	2033	200EW	3.33×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2034	2043	200EW	1.17×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2044	2044	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm deep soil removal	2032	2037	200EW	8.33×10^{-4}	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	200EW	2.41	4.80×10^{-1}	1.39×10^{-2}	4.49×10^{-1}	(a)	2.75	8.32×10^{-1}
Postclosure care	2046	2145	200EW	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200EW=200-East and 200-West Areas; 200EW+=200-East and 200-West Areas and Waste Treatment Plant area; HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; WTP_AS=Waste Treatment Plant area source; WTP_PS=Waste Treatment Plant point source.

Source: SAIC 2010a.

Table G–35. FFTF Decommissioning Alternative 1 Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation								
Administrative controls	2008	2107	400 Area	1.12	2.91×10^{-2}	1.78×10^{-3}	1.50×10^{-3}	5.40×10^{-2}

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.
Source: SAIC 2010b.

Table G–36. FFTF Decommissioning Alternative 1 Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation										
Administrative controls	2008	2107	400 Area	8.64×10^{-5}	1.44×10^{-4}	8.08×10^{-7}	4.85×10^{-5}	(a)	2.21×10^{-3}	6.24×10^{-4}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.
Source: SAIC 2010b.

Table G–37. FFTF Decommissioning Alternative 2 Criteria Pollutant Emissions for Hanford Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Decommissioning								
Above-grade structure and equipment removal	2013	2020	400 Area	1.12×10^{1}	1.08×10^{1}	1.21×10^{1}	1.56×10^{-2}	1.29
Backfill of Reactor Containment Building with grout	2017	2017	400 Area	1.31	6.06	1.86	2.06×10^{-3}	4.95×10^{-1}
Backfill of Buildings 491 East and West with grout	2017	2017	400 Area	8.47×10^{-1}	3.94	3.76	1.33×10^{-3}	3.21×10^{-1}
Grout facility construction	2016	2016	400 Area	4.35	1.66×10^{1}	8.39	1.08	1.38
Grout facility operations	2017	2017	400 Area	7.97	3.70×10^{1}	2.60	1.26×10^{-2}	3.02
Grout facility deactivation	2018	2018	400 Area	2.42	5.68	3.50×10^{1}	3.73×10^{-1}	7.84×10^{-1}
Nonhazardous waste transportation	2013	2020	400 Area	4.37×10^{-3}	2.03×10^{-2}	1.43×10^{-3}	6.90×10^{-6}	1.66×10^{-3}
Construction								
Sodium Reaction Facility	2015	2016	400 Area	1.85×10^{2}	3.89×10^{1}	1.47×10^{1}	2.49×10^{-1}	1.14×10^{1}
Remote Treatment Project	2015	2016	400 Area	1.41	6.53	2.74×10^{1}	2.22×10^{-3}	5.31×10^{-1}
Operations								
Sodium preparation	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)
Sodium Reaction Facility	2017	2018	400 Area	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)
Deactivation								
Sodium Reaction Facility	2019	2019	400 Area	5.22×10^{1}	1.10×10^{1}	7.61×10^{-1}	7.05×10^{-2}	3.21
Remote Treatment Project	2018	2018	400 Area	(a)	(a)	(a)	(a)	(a)
Closure								
Site regrading	2021	2021	400 Area	2.81×10^{1}	6.01×10^{1}	2.15×10^{1}	4.07×10^{-2}	5.61
Site revegetation	2021	2021	400 Area	1.12	9.05×10^{-1}	1.73×10^{1}	1.55×10^{-3}	1.17×10^{-1}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	400 Area	9.36×10^{1}	6.74×10^{1}	1.42×10^{1}	1.29×10^{-1}	9.17
Postclosure care	2022	2121	400 Area	1.86	4.84×10^{-2}	2.97×10^{-3}	2.50×10^{-3}	9.00×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–38. FFTF Decommissioning Alternative 2 Toxic Pollutant Emissions for Hanford Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Decommissioning										
Above-grade structure and equipment removal	2013	2020	400 Area	1.72×10^{-2}	3.38×10^{-3}	9.97×10^{-5}	3.20×10^{-3}	(a)	1.87×10^{-2}	5.67×10^{-3}
Backfill of Reactor Containment Building with grout	2017	2017	400 Area	9.54×10^{-3}	1.28×10^{-3}	5.38×10^{-5}	1.62×10^{-3}	(a)	5.62×10^{-4}	3.92×10^{-4}
Backfill of Buildings 491 East and West with grout	2017	2017	400 Area	6.19×10^{-3}	8.32×10^{-4}	3.48×10^{-5}	1.05×10^{-3}	(a)	3.65×10^{-4}	2.54×10^{-4}
Grout facility construction	2016	2016	400 Area	1.11×10^{-1}	5.98×10^{-3}	2.45×10^{-4}	7.41×10^{-3}	(a)	4.99×10^{-3}	2.47×10^{-3}
Grout facility operations	2017	2017	400 Area	5.82×10^{-2}	7.83×10^{-3}	9.90×10^{-3}	3.28×10^{-4}	(a)	3.43×10^{-3}	2.39×10^{-3}
Grout facility deactivation	2018	2018	400 Area	(a)	2.04×10^{-3}	7.96×10^{-5}	2.43×10^{-3}	(a)	3.27×10^{-3}	1.26×10^{-3}
Nonhazardous waste transportation	2013	2020	400 Area	3.19×10^{-5}	4.29×10^{-6}	1.80×10^{-7}	5.43×10^{-6}	(a)	1.88×10^{-6}	1.31×10^{-6}
Construction										
Sodium Reaction Facility	2015	2016	400 Area	9.16	3.01×10^{-2}	4.32×10^{-4}	1.69×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Remote Treatment Project	2015	2016	400 Area	1.03×10^{-2}	1.38×10^{-3}	5.76×10^{-5}	1.74×10^{-3}	(a)	6.03×10^{-4}	4.21×10^{-4}
Operations										
Sodium preparation	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Reaction Facility	2017	2018	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Sodium Reaction Facility	2019	2019	400 Area	1.91×10^{-2}	8.50×10^{-3}	1.22×10^{-4}	4.77×10^{-3}	(a)	1.00×10^{-1}	2.86×10^{-2}
Remote Treatment Project	2018	2018	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure										
Site regrading	2021	2021	400 Area	9.51×10^{-2}	1.46×10^{-2}	5.40×10^{-4}	1.66×10^{-2}	(a)	3.57×10^{-2}	1.24×10^{-2}
Site revegetation	2021	2021	400 Area	1.46×10^{-3}	3.06×10^{-4}	8.48×10^{-6}	2.76×10^{-4}	(a)	1.93×10^{-3}	5.78×10^{-4}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	400 Area	1.09×10^{-1}	2.40×10^{-2}	6.36×10^{-4}	2.09×10^{-2}	(a)	1.63×10^{-1}	4.86×10^{-2}
Postclosure care	2022	2121	400 Area	2.88×10^{-1}	4.80×10^{-1}	2.69×10^{-3}	1.62×10^{-1}	(a)	7.37	2.08

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–39. FFTF Decommissioning Alternative 3 Criteria Pollutant Emissions for Hanford Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Decommissioning								
Above-grade structure and equipment removal	2013	2020	400 Area	1.12×10^{1}	1.08×10^{1}	1.21×10^{1}	1.56×10^{-2}	1.29
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	400 Area	4.34×10^{1}	1.71×10^{1}	5.59	5.90×10^{-2}	3.24
Grout facility construction	2012	2012	400 Area	7.27	2.77×10^{1}	1.40×10^{1}	1.80	2.30
Grout facility operations	2013	2014	400 Area	3.98	1.85×10^{1}	1.30	6.29×10^{-3}	1.51
Grout facility deactivation	2015	2015	400 Area	2.42	5.68	3.50×10^{1}	3.73×10^{-1}	7.84×10^{-1}
Nonhazardous waste transportation	2013	2020	400 Area	4.37×10^{-3}	2.03×10^{-2}	1.43×10^{-3}	6.90×10^{-6}	1.66×10^{-3}
Construction								
Sodium Reaction Facility	2015	2016	400 Area	1.85×10^{2}	3.89×10^{1}	1.47×10^{1}	2.49×10^{-1}	1.14×10^{1}
Remote Treatment Project	2015	2016	400 Area	1.41	6.53	2.74×10^{1}	2.22×10^{-3}	5.31×10^{-1}
Operations								
Sodium preparation	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)
Sodium Reaction Facility	2017	2018	400 Area	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)
Deactivation								
Sodium Reaction Facility	2019	2019	400 Area	5.22×10^{1}	1.10×10^{1}	7.61×10^{-1}	7.05×10^{-2}	3.21
Remote Treatment Project	2018	2018	400 Area	(a)	(a)	(a)	(a)	(a)
Closure								
Site regrading	2018	2018	400 Area	4.00×10^{1}	8.01×10^{1}	2.51×10^{1}	5.77×10^{-2}	7.60
Site revegetation	2018	2018	400 Area	1.27	1.02	1.95×10^{1}	1.75×10^{-3}	1.32×10^{-1}
Postclosure care	2022	2121	400 Area	1.86	4.84×10^{-2}	2.97×10^{-3}	2.50×10^{-3}	9.00×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–40. FFTF Decommissioning Alternative 3 Toxic Pollutant Emissions for Hanford Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Decommissioning										
Above-grade structure and equipment removal	2013	2020	400 Area	1.72×10^{-2}	3.38×10^{-3}	9.97×10^{-5}	3.20×10^{-3}	(a)	1.87×10^{-2}	5.67×10^{-3}
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	400 Area	2.83×10^{-2}	8.53×10^{-3}	1.71×10^{-4}	6.02×10^{-3}	(a)	8.05×10^{-2}	2.33×10^{-2}
Grout facility construction	2012	2012	400 Area	1.11×10^{-1}	5.98×10^{-3}	2.45×10^{-4}	7.41×10^{-3}	(a)	4.99×10^{-3}	2.47×10^{-3}
Grout facility operations	2013	2014	400 Area	2.91×10^{-2}	3.91×10^{-3}	4.95×10^{-3}	1.64×10^{-4}	(a)	1.72×10^{-3}	1.20×10^{-3}
Grout facility deactivation	2015	2015	400 Area	(a)	2.04×10^{-3}	7.96×10^{-5}	2.43×10^{-3}	(a)	3.27×10^{-3}	1.26×10^{-3}
Nonhazardous waste transportation	2013	2020	400 Area	3.19×10^{-5}	4.29×10^{-6}	1.80×10^{-7}	5.43×10^{-6}	(a)	1.88×10^{-6}	1.31×10^{-6}
Construction										
Sodium Reaction Facility	2015	2016	400 Area	9.16	3.01×10^{-2}	4.32×10^{-4}	1.69×10^{-2}	(a)	3.54×10^{-1}	1.01×10^{-1}
Remote Treatment Project	2015	2016	400 Area	1.03×10^{-2}	1.38×10^{-3}	5.76×10^{-5}	1.74×10^{-3}	(a)	6.03×10^{-4}	4.21×10^{-4}
Operations										
Sodium preparation	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Reaction Facility	2017	2018	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Sodium Reaction Facility	2019	2019	400 Area	1.91×10^{-2}	8.50×10^{-3}	1.22×10^{-4}	4.77×10^{-3}	(a)	1.00×10^{-1}	2.86×10^{-2}
Remote Treatment Project	2018	2018	400 Area	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure										
Site regrading	2018	2018	400 Area	1.27×10^{-1}	1.98×10^{-2}	7.21×10^{-4}	2.23×10^{-2}	(a)	5.27×10^{-2}	1.79×10^{-2}
Site revegetation	2018	2018	400 Area	1.64×10^{-3}	3.46×10^{-4}	9.57×10^{-6}	3.12×10^{-4}	(a)	2.17×10^{-3}	6.52×10^{-4}
Postclosure care	2022	2121	400 Area	2.88×10^{-1}	4.80×10^{-1}	2.69×10^{-3}	1.62×10^{-1}	(a)	7.37	2.08

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–41. FFTF Decommissioning Alternative 2 Criteria Pollutant Emissions for Idaho National Laboratory Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Sodium Processing Facility	2014	2014	MFC	8.82	1.28	4.49	1.19×10^{-2}	5.02×10^{-1}
Operations								
Sodium preparation	2015	2015	Hanford	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	MFC	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	INTEC	(a)	(a)	(a)	(a)	(a)
Deactivation								
Sodium Processing Facility	2016	2016	MFC	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	INTEC	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; Hanford=Hanford Site; INTEC=Idaho Nuclear Technology and Engineering Center; MFC=Materials and Fuels Complex; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–42. FFTF Decommissioning Alternative 2 Toxic Pollutant Emissions for Idaho National Laboratory Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Sodium Processing Facility	2014	2014	MFC	2.32×10^{-3}	1.33×10^{-3}	1.55×10^{-5}	6.55×10^{-4}	(a)	1.71×10^{-2}	4.87×10^{-3}
Operations										
Sodium preparation	2015	2015	Hanford	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	MFC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	INTEC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Sodium Processing Facility	2016	2016	MFC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	INTEC	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; Hanford=Hanford Site; INTEC=Idaho Nuclear Technology and Engineering Center; MFC=Materials and Fuels Complex.

Source: SAIC 2010b.

Table G–43. FFTF Decommissioning Alternative 3 Criteria Pollutant Emissions for Idaho National Laboratory Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Sodium Processing Facility	2014	2014	MFC	8.82	1.28	4.49	1.19×10^{-2}	5.02×10^{-1}
Operations								
Sodium preparation	2015	2015	Hanford	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	MFC	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	INTEC	(a)	(a)	(a)	(a)	(a)
Deactivation								
Sodium Processing Facility	2016	2016	MFC	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	INTEC	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; Hanford=Hanford Site; INTEC=Idaho Nuclear Technology and Engineering Center; MFC=Materials and Fuels Complex; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–44. FFTF Decommissioning Alternative 3 Toxic Pollutant Emissions for Idaho National Laboratory Activities

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Sodium Processing Facility	2014	2014	MFC	2.32×10^{-3}	1.33×10^{-3}	1.55×10^{-5}	6.55×10^{-4}	(a)	1.71×10^{-2}	4.87×10^{-3}
Operations										
Sodium preparation	2015	2015	Hanford	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	MFC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	INTEC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation										
Sodium Processing Facility	2016	2016	MFC	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	INTEC	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; Hanford=Hanford Site; INTEC=Idaho Nuclear Technology and Engineering Center; MFC=Materials and Fuels Complex.

Source: SAIC 2010b.

Table G–45. Waste Management Alternative 1 Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations								
Low-level radioactive waste burial grounds	2007	2035	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Deactivation								
Integrated Disposal Facility	2009	2009	200E	5.33×10^{1}	2.40×10^{2}	8.08×10^{2}	8.37×10^{-2}	1.96×10^{1}
Postclosure care	2036	2135	200EW	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–46. Waste Management Alternative 1 Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations										
Low-level radioactive waste burial grounds	2007	2035	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Deactivation										
Integrated Disposal Facility	2009	2009	200E	3.77×10^{-1}	5.09×10^{-2}	2.13×10^{-3}	6.42×10^{-2}	(a)	2.54×10^{-2}	1.64×10^{-2}
Postclosure care	2036	2135	200EW	8.12×10^{-3}	2.48×10^{-3}	4.92×10^{-5}	1.74×10^{-3}	(a)	2.36×10^{-2}	6.83×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–47. Waste Management Alternative 2 (Treatment and Storage) Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
T Plant complex expansion	2011	2012	200W	6.27×10^{1}	1.16×10^{1}	2.69×10^{1}	8.46×10^{-2}	3.75
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	200W	7.15×10^{2}	1.33×10^{2}	1.27×10^{2}	9.64×10^{-1}	4.27×10^{1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	200W	5.26×10^{2}	7.62×10^{1}	8.10×10^{1}	7.08×10^{-1}	2.99×10^{1}
Central Waste Complex expansion	2011	2012	200W	2.38×10^{2}	4.42×10^{1}	4.22×10^{1}	3.21×10^{-1}	1.42×10^{1}
Operations								
T Plant complex expansion	2013	2050	200W	1.05×10^{2}	4.87×10^{2}	4.30×10^{1}	1.66×10^{-1}	3.98×10^{1}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	200W	2.83×10^{-1}	1.31	1.14×10^{2}	4.47×10^{-4}	1.07×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	200W	1.13×10^{-1}	5.25×10^{-1}	1.14×10^{2}	1.79×10^{-4}	4.29×10^{-2}
Central Waste Complex expansion	2013	2050	200W	6.04×10^{1}	1.15×10^{1}	4.91×10^{2}	8.15×10^{-2}	3.63
Deactivation								
T Plant complex expansion	2051	2051	200W	7.48	9.89	5.05	1.05×10^{-2}	1.06
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	1.41×10^{-1}	6.56×10^{-1}	9.48×10^{1}	2.23×10^{-4}	5.36×10^{-2}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	5.66×10^{-2}	2.63×10^{-1}	3.79×10^{1}	8.93×10^{-5}	2.14×10^{-2}
Central Waste Complex expansion	2051	2051	200W	3.02×10^{1}	5.75	1.02×10^{1}	4.07×10^{-2}	1.82

Key: 200W=200-West Area; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; VOC=volatile organic compound; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–48. Waste Management Alternative 2 (Treatment and Storage) Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
T Plant complex expansion	2011	2012	200W	2.05×10^{-2}	9.92×10^{-3}	1.33×10^{-4}	5.32×10^{-3}	(a)	1.21×10^{-1}	3.45×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	200W	2.34×10^{-1}	1.13×10^{-1}	1.51×10^{-3}	6.06×10^{-2}	(a)	1.38	3.93×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	200W	1.38×10^{-1}	7.93×10^{-2}	5.57×10^{-3}	2.34×10^{-1}	(a)	1.02	2.90×10^{-1}
Central Waste Complex expansion	2011	2012	200W	7.79×10^{-2}	3.77×10^{-2}	5.05×10^{-4}	2.02×10^{-2}	(a)	4.59×10^{-1}	1.31×10^{-1}
Operations										
T Plant complex expansion	2013	2050	200W	7.66×10^{-1}	1.03×10^{-1}	4.32×10^{-3}	1.30×10^{-1}	(a)	4.52×10^{-2}	3.15×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	200W	2.06×10^{-3}	2.78×10^{-4}	1.16×10^{-5}	3.51×10^{-4}	(a)	1.22×10^{-4}	8.48×10^{-5}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	200W	8.26×10^{-4}	1.11×10^{-4}	4.66×10^{-6}	1.41×10^{-4}	(a)	4.87×10^{-5}	3.39×10^{-5}
Central Waste Complex expansion	2013	2050	200W	2.02×10^{-2}	9.62×10^{-3}	1.31×10^{-4}	5.20×10^{-3}	(a)	1.16×10^{-1}	3.32×10^{-2}
Deactivation										
T Plant complex expansion	2051	2051	200W	3.11×10^{-1}	2.76×10^{-3}	9.03×10^{-5}	2.84×10^{-3}	(a)	1.16×10^{-2}	3.63×10^{-3}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	1.03×10^{-3}	1.39×10^{-4}	5.82×10^{-6}	1.76×10^{-4}	(a)	6.09×10^{-5}	4.24×10^{-5}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	4.13×10^{-4}	5.56×10^{-5}	2.33×10^{-6}	7.03×10^{-5}	(a)	2.44×10^{-5}	1.70×10^{-5}
Central Waste Complex expansion	2051	2051	200W	1.01×10^{-2}	4.81×10^{-3}	6.53×10^{-5}	2.60×10^{-3}	(a)	5.81×10^{-2}	1.66×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200W=200-West Area; TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–49. Waste Management Alternative 2, Disposal Group 1, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility	2006	2008	200E	9.29×10^{1}	3.32×10^{2}	2.13×10^{3}	1.41×10^{-1}	2.81×10^{1}
River Protection Project Disposal Facility	2019	2021	200EW	8.38×10^{1}	2.99×10^{2}	1.92×10^{3}	1.28×10^{-1}	2.53×10^{1}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility	2009	2050	200E	2.88×10^{1}	7.40×10^{1}	2.11×10^{3}	4.23×10^{-2}	6.63
River Protection Project Disposal Facility	2022	2050	200EW	7.25×10^{1}	1.08×10^{2}	1.64×10^{2}	1.03×10^{-1}	1.11×10^{1}
Closure								
Integrated Disposal Facility	2051	2052	200E	2.21×10^{3}	1.54×10^{3}	3.34×10^{2}	3.04	2.13×10^{2}
Postclosure care, Integrated Disposal Facility	2053	2152	200E	2.04×10^{1}	7.88	5.49×10^{-1}	2.77×10^{-2}	1.51
River Protection Project Disposal Facility	2051	2052	200EW	1.99×10^{3}	1.39×10^{3}	3.01×10^{2}	2.74	1.92×10^{2}
Postclosure care, River Protection Project Disposal Facility	2053	2152	200EW	1.84×10^{1}	7.11	4.96×10^{-1}	2.50×10^{-2}	1.37

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.
Source: SAIC 2010c.

Table G–50. Waste Management Alternative 2, Disposal Group 1, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility	2006	2008	200E	5.23×10^{-1}	7.29×10^{-2}	2.95×10^{-3}	8.96×10^{-2}	(a)	7.32×10^{-2}	3.34×10^{-2}
River Protection Project Disposal Facility	2019	2021	200EW	4.72×10^{-1}	6.57×10^{-2}	2.66×10^{-3}	8.08×10^{-2}	(a)	6.61×10^{-2}	3.01×10^{-2}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility	2009	2050	200E	1.17×10^{-1}	1.72×10^{-2}	6.62×10^{-4}	2.03×10^{-2}	(a)	3.23×10^{-2}	1.20×10^{-2}
River Protection Project Disposal Facility	2022	2050	200EW	1.71×10^{-1}	2.89×10^{-2}	9.80×10^{-4}	3.06×10^{-2}	(a)	1.08×10^{-1}	3.45×10^{-2}
Closure										
Integrated Disposal Facility	2051	2052	200E	2.48	5.58×10^{-1}	1.45×10^{-2}	4.80×10^{-1}	(a)	3.87	1.15
Postclosure care, Integrated Disposal Facility	2053	2152	200E	1.31×10^{-2}	3.99×10^{-3}	7.91×10^{-5}	2.79×10^{-3}	(a)	3.79×10^{-2}	1.10×10^{-2}
River Protection Project Disposal Facility	2051	2052	200EW	2.24	5.03×10^{-1}	1.31×10^{-2}	4.33×10^{-1}	(a)	3.50	1.04
Postclosure care, River Protection Project Disposal Facility	2053	2152	200EW	1.18×10^{-2}	3.60×10^{-3}	7.14×10^{-5}	2.52×10^{-3}	(a)	3.42×10^{-2}	9.91×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–51. Waste Management Alternative 2, Disposal Group 2, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility	2006	2008	200E	3.28×10^{1}	1.17×10^{2}	7.52×10^{2}	5.00×10^{-2}	9.92
River Protection Project Disposal Facility	2019	2021	200EW	6.49×10^{2}	2.32×10^{3}	1.49×10^{4}	9.89×10^{-1}	1.96×10^{2}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility	2009	2100	200E	1.02×10^{1}	2.61×10^{1}	7.46×10^{2}	1.50×10^{-2}	2.34
River Protection Project Disposal Facility	2022	2100	200EW	5.62×10^{2}	8.35×10^{2}	1.27×10^{3}	7.95×10^{-1}	8.59×10^{1}
Closure								
Integrated Disposal Facility	2101	2102	200E	7.81×10^{2}	5.42×10^{2}	1.18×10^{2}	1.07	7.51×10^{1}
Postclosure care, Integrated Disposal Facility	2103	2202	200E	7.22	2.78	1.94×10^{-1}	9.80×10^{-3}	5.35×10^{-1}
River Protection Project Disposal Facility	2101	2102	200EW	1.54×10^{4}	1.07×10^{4}	2.34×10^{3}	2.12×10^{1}	1.49×10^{3}
Postclosure care, River Protection Project Disposal Facility	2103	2202	200EW	1.43×10^{2}	5.51×10^{1}	3.84	1.94×10^{-1}	1.06×10^{1}

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–52. Waste Management Alternative 2, Disposal Group 2, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility	2006	2008	200E	1.85×10^{-1}	2.57×10^{-2}	1.04×10^{-3}	3.17×10^{-2}	(a)	2.59×10^{-2}	1.18×10^{-2}
River Protection Project Disposal Facility	2019	2021	200EW	3.65	5.09×10^{-1}	2.06×10^{-2}	6.26×10^{-1}	(a)	5.12×10^{-1}	2.34×10^{-1}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility	2009	2100	200E	4.13×10^{-2}	6.09×10^{-3}	2.34×10^{-4}	7.16×10^{-3}	(a)	1.14×10^{-2}	4.22×10^{-3}
River Protection Project Disposal Facility	2022	2100	200EW	1.33	2.24×10^{-1}	7.59×10^{-3}	2.37×10^{-1}	(a)	8.36×10^{-1}	2.68×10^{-1}
Closure										
Integrated Disposal Facility	2101	2102	200E	8.77×10^{-1}	1.97×10^{-1}	5.14×10^{-3}	1.69×10^{-1}	(a)	1.37	4.07×10^{-1}
Postclosure care, Integrated Disposal Facility	2103	2202	200E	4.62×10^{-3}	1.41×10^{-3}	2.80×10^{-5}	9.87×10^{-4}	(a)	1.34×10^{-2}	3.88×10^{-3}
River Protection Project Disposal Facility	2101	2102	200EW	1.74×10^{1}	3.90	1.02×10^{-1}	3.35	(a)	2.71×10^{1}	8.05
Postclosure care, River Protection Project Disposal Facility	2103	2202	200EW	9.14×10^{-2}	2.79×10^{-2}	5.53×10^{-4}	1.95×10^{-2}	(a)	2.65×10^{-1}	7.68×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–53. Waste Management Alternative 2, Disposal Group 3, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)				
				Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility	2006	2008	200E	3.28×10^{1}	1.17×10^{2}	7.52×10^{2}	5.00×10^{-2}	9.92
River Protection Project Disposal Facility	2019	2021	200EW	6.49×10^{2}	2.32×10^{3}	1.49×10^{4}	9.89×10^{-1}	1.96×10^{2}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility	2009	2165	200E	1.02×10^{1}	2.61×10^{1}	7.46×10^{2}	1.50×10^{-2}	2.34
River Protection Project Disposal Facility	2022	2165	200EW	5.62×10^{2}	8.35×10^{2}	1.27×10^{3}	7.95×10^{-1}	8.59×10^{1}
Closure								
Integrated Disposal Facility	2166	2167	200E	7.81×10^{2}	5.42×10^{2}	1.18×10^{2}	1.07	7.51×10^{1}
Postclosure care, Integrated Disposal Facility	2168	2267	200E	7.22	2.78	1.94×10^{-1}	9.80×10^{-3}	5.35×10^{-1}
River Protection Project Disposal Facility	2166	2167	200EW	1.54×10^{4}	1.07×10^{4}	2.34×10^{3}	2.12×10^{1}	1.49×10^{3}
Postclosure care, River Protection Project Disposal Facility	2168	2267	200EW	1.43×10^{2}	5.51×10^{1}	3.84	1.94×10^{-1}	1.06×10^{1}

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–54. Waste Management Alternative 2, Disposal Group 3, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility	2006	2008	200E	1.85×10^{-1}	2.57×10^{-2}	1.04×10^{-3}	3.17×10^{-2}	(a)	2.59×10^{-2}	1.18×10^{-2}
River Protection Project Disposal Facility	2019	2021	200EW	3.65	5.09×10^{-1}	2.06×10^{-2}	6.26×10^{-1}	(a)	5.12×10^{-1}	2.34×10^{-1}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility	2009	2165	200E	4.13×10^{-2}	6.09×10^{-3}	2.34×10^{-4}	7.16×10^{-3}	(a)	1.14×10^{-2}	4.22×10^{-3}
River Protection Project Disposal Facility	2022	2165	200EW	1.33	2.24×10^{-1}	7.59×10^{-3}	2.37×10^{-1}	(a)	8.36×10^{-1}	2.68×10^{-1}
Closure										
Integrated Disposal Facility	2166	2167	200E	8.77×10^{-1}	1.97×10^{-1}	5.14×10^{-3}	1.69×10^{-1}	(a)	1.37	4.07×10^{-1}
Postclosure care, Integrated Disposal Facility	2168	2267	200E	4.62×10^{-3}	1.41×10^{-3}	2.80×10^{-5}	9.87×10^{-4}	(a)	1.34×10^{-2}	3.88×10^{-3}
River Protection Project Disposal Facility	2166	2167	200EW	1.74×10^{1}	3.90	1.02×10^{-1}	3.35	(a)	2.71×10^{1}	8.05
Postclosure care, River Protection Project Disposal Facility	2168	2267	200EW	9.14×10^{-2}	2.79×10^{-2}	5.53×10^{-4}	1.95×10^{-2}	(a)	2.65×10^{-1}	7.68×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–55. Waste Management Alternative 3 (Treatment and Storage) Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
T Plant complex expansion	2011	2012	200W	6.27×10^{1}	1.16×10^{1}	2.69×10^{1}	8.46×10^{-2}	3.75
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	200W	7.15×10^{2}	1.33×10^{2}	1.27×10^{2}	9.64×10^{-1}	4.27×10^{1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	200W	5.26×10^{2}	7.62×10^{1}	8.10×10^{1}	7.08×10^{-1}	2.99×10^{1}
Central Waste Complex expansion	2011	2012	200W	2.38×10^{2}	4.42×10^{1}	4.22×10^{1}	3.21×10^{-1}	1.42×10^{1}
Operations								
T Plant complex expansion	2013	2050	200W	1.05×10^{2}	4.87×10^{2}	4.30×10^{1}	1.66×10^{-1}	3.98×10^{1}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	200W	2.83×10^{-1}	1.31	1.14×10^{2}	4.47×10^{-4}	1.07×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	200W	1.13×10^{-1}	5.25×10^{-1}	1.14×10^{2}	1.79×10^{-4}	4.29×10^{-2}
Central Waste Complex expansion	2013	2050	200W	6.04×10^{1}	1.15×10^{1}	4.91×10^{2}	8.15×10^{-2}	3.63
Deactivation								
T Plant complex expansion	2051	2051	200W	7.48	9.89	5.05	1.05×10^{-2}	1.06
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	1.41×10^{-1}	6.56×10^{-1}	9.48×10^{1}	2.23×10^{-4}	5.36×10^{-2}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	5.66×10^{-2}	2.63×10^{-1}	3.79×10^{1}	8.93×10^{-5}	2.14×10^{-2}
Central Waste Complex expansion	2051	2051	200W	3.02×10^{1}	5.75	1.02×10^{1}	4.07×10^{-2}	1.82

Key: 200W=200-West Area; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; VOC=volatile organic compound; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–56. Waste Management Alternative 3 (Treatment and Storage) Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
T Plant complex expansion	2011	2012	200W	2.05×10^{-2}	9.92×10^{-3}	1.33×10^{-4}	5.32×10^{-3}	(a)	1.21×10^{-1}	3.45×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	200W	2.34×10^{-1}	1.13×10^{-1}	1.51×10^{-3}	6.06×10^{-2}	(a)	1.38	3.93×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	200W	1.38×10^{-1}	7.93×10^{-2}	5.57×10^{-3}	2.34×10^{-1}	(a)	1.02	2.90×10^{-1}
Central Waste Complex expansion	2011	2012	200W	7.79×10^{-2}	3.77×10^{-2}	5.05×10^{-4}	2.02×10^{-2}	(a)	4.59×10^{-1}	1.31×10^{-1}
Operations										
T Plant complex expansion	2013	2050	200W	7.66×10^{-1}	1.03×10^{-1}	4.32×10^{-3}	1.30×10^{-1}	(a)	4.52×10^{-2}	3.15×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	200W	2.06×10^{-3}	2.78×10^{-4}	1.16×10^{-5}	3.51×10^{-4}	(a)	1.22×10^{-4}	8.48×10^{-5}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	200W	8.26×10^{-4}	1.11×10^{-4}	4.66×10^{-6}	1.41×10^{-4}	(a)	4.87×10^{-5}	3.39×10^{-5}
Central Waste Complex expansion	2013	2050	200W	2.02×10^{-2}	9.62×10^{-3}	1.31×10^{-4}	5.20×10^{-3}	(a)	1.16×10^{-1}	3.32×10^{-2}
Deactivation										
T Plant complex expansion	2051	2051	200W	3.11×10^{-1}	2.76×10^{-3}	9.03×10^{-5}	2.84×10^{-3}	(a)	1.16×10^{-2}	3.63×10^{-3}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	1.03×10^{-3}	1.39×10^{-4}	5.82×10^{-6}	1.76×10^{-4}	(a)	6.09×10^{-5}	4.24×10^{-5}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	200W	4.13×10^{-4}	5.56×10^{-5}	2.33×10^{-6}	7.03×10^{-5}	(a)	2.44×10^{-5}	1.70×10^{-5}
Central Waste Complex expansion	2051	2051	200W	1.01×10^{-2}	4.81×10^{-3}	6.53×10^{-5}	2.60×10^{-3}	(a)	5.81×10^{-2}	1.66×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200W=200-West Area; TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–57. Waste Management Alternative 3, Disposal Group 1, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	8.52×10^{1}	3.04×10^{2}	1.95×10^{3}	1.30×10^{-1}	2.58×10^{1}
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	6.98	2.50×10^{1}	1.60×10^{2}	1.06×10^{-2}	2.11
River Protection Project Disposal Facility	2019	2021	200EW	8.38×10^{1}	2.99×10^{2}	1.92×10^{3}	1.28×10^{-1}	2.53×10^{1}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility, 200-East Area	2009	2050	200E	2.64×10^{1}	6.79×10^{1}	1.94×10^{3}	3.88×10^{-2}	6.09
Integrated Disposal Facility, 200-West Area	2009	2050	200W	2.16	5.56	1.59×10^{2}	3.18×10^{-3}	4.99×10^{-1}
River Protection Project Disposal Facility	2022	2050	200EW	7.25×10^{1}	1.08×10^{2}	1.64×10^{2}	1.03×10^{-1}	1.11×10^{1}
Closure								
Integrated Disposal Facility, 200-East Area	2051	2052	200E	2.03×10^{3}	1.41×10^{3}	3.07×10^{2}	2.79	1.95×10^{2}
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.66×10^{2}	1.15×10^{2}	2.51×10^{1}	2.28×10^{-1}	1.60×10^{1}
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	200E	1.87×10^{1}	7.23	5.04×10^{-1}	2.54×10^{-2}	1.39
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	1.54	5.92×10^{-1}	4.13×10^{-2}	2.09×10^{-3}	1.14×10^{-1}
River Protection Project Disposal Facility	2051	2052	200EW	1.99×10^{3}	1.39×10^{3}	3.01×10^{2}	2.74	1.92×10^{2}
Postclosure care, River Protection Project Disposal Facility	2053	2152	200EW	1.84×10^{1}	7.11	4.96×10^{-1}	2.50×10^{-2}	1.37

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–58. Waste Management Alternative 3, Disposal Group 1, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	4.79×10^{-1}	6.68×10^{-2}	2.71×10^{-3}	8.22×10^{-2}	(a)	6.72×10^{-2}	3.06×10^{-2}
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	3.93×10^{-2}	5.48×10^{-3}	2.22×10^{-4}	6.74×10^{-3}	(a)	5.50×10^{-3}	2.51×10^{-3}
River Protection Project Disposal Facility	2019	2021	200EW	4.72×10^{-1}	6.57×10^{-2}	2.66×10^{-3}	8.08×10^{-2}	(a)	6.61×10^{-2}	3.01×10^{-2}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility, 200-East Area	2009	2050	200E	1.07×10^{-1}	1.58×10^{-2}	6.07×10^{-4}	1.86×10^{-2}	(a)	2.96×10^{-2}	1.10×10^{-2}
Integrated Disposal Facility, 200-West Area	2009	2050	200W	8.78×10^{-3}	1.30×10^{-3}	4.98×10^{-5}	1.52×10^{-3}	(a)	2.43×10^{-3}	8.99×10^{-4}
River Protection Project Disposal Facility	2022	2050	200EW	1.71×10^{-1}	2.89×10^{-2}	9.80×10^{-4}	3.06×10^{-2}	(a)	1.08×10^{-1}	3.45×10^{-2}
Closure										
Integrated Disposal Facility, 200-East Area	2051	2052	200E	2.28	5.11×10^{-1}	1.33×10^{-2}	4.40×10^{-1}	(a)	3.55	1.06
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.87×10^{-1}	4.19×10^{-2}	1.09×10^{-3}	3.61×10^{-2}	(a)	2.91×10^{-1}	8.65×10^{-2}
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	200E	1.20×10^{-2}	3.66×10^{-3}	7.26×10^{-5}	2.56×10^{-3}	(a)	3.48×10^{-2}	1.01×10^{-2}
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	9.83×10^{-4}	3.00×10^{-4}	5.95×10^{-6}	2.10×10^{-4}	(a)	2.85×10^{-3}	8.26×10^{-4}
River Protection Project Disposal Facility	2051	2052	200EW	2.24	5.03×10^{-1}	1.31×10^{-2}	4.33×10^{-1}	(a)	3.50	1.04
Postclosure care, River Protection Project Disposal Facility	2053	2152	200EW	1.18×10^{-2}	3.60×10^{-3}	7.14×10^{-5}	2.52×10^{-3}	(a)	3.42×10^{-2}	9.91×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–59. Waste Management Alternative 3, Disposal Group 2, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	2.65×10^{1}	9.48×10^{1}	6.08×10^{2}	4.04×10^{-2}	8.02
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	6.98	2.50×10^{1}	1.60×10^{2}	1.06×10^{-2}	2.11
River Protection Project Disposal Facility	2019	2021	200EW	6.49×10^{2}	2.32×10^{3}	1.49×10^{4}	9.89×10^{-1}	1.96×10^{2}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility, 200-East Area	2009	2100	200E	8.21	2.11×10^{1}	6.03×10^{2}	1.21×10^{-2}	1.90
Integrated Disposal Facility, 200-West Area	2009	2050	200W	2.16	5.56	1.59×10^{2}	3.18×10^{-3}	4.99×10^{-1}
River Protection Project Disposal Facility	2022	2100	200EW	5.62×10^{2}	8.35×10^{2}	1.27×10^{3}	7.95×10^{-1}	8.59×10^{1}
Closure								
Integrated Disposal Facility, 200-East Area	2101	2102	200E	6.31×10^{2}	4.39×10^{2}	9.55×10^{1}	8.68×10^{-1}	6.07×10^{1}
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.66×10^{2}	1.15×10^{2}	2.51×10^{1}	2.28×10^{-1}	1.60×10^{1}
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	200E	5.83	2.25	1.57×10^{-1}	7.92×10^{-3}	4.32×10^{-1}
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	1.54	5.92×10^{-1}	4.13×10^{-2}	2.09×10^{-3}	1.14×10^{-1}
River Protection Project Disposal Facility	2101	2102	200EW	1.54×10^{4}	1.07×10^{4}	2.34×10^{3}	2.12×10^{1}	1.49×10^{3}
Postclosure care, River Protection Project Disposal Facility	2103	2202	200EW	1.43×10^{2}	5.51×10^{1}	3.84	1.94×10^{-1}	1.06×10^{1}

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–60. Waste Management Alternative 3, Disposal Group 2, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year)						
				Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	1.49×10^{-1}	2.08×10^{-2}	8.44×10^{-4}	2.56×10^{-2}	(a)	2.09×10^{-2}	9.54×10^{-3}
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	3.93×10^{-2}	5.48×10^{-3}	2.22×10^{-4}	6.74×10^{-3}	(a)	5.50×10^{-3}	2.51×10^{-3}
River Protection Project Disposal Facility	2019	2021	200EW	3.65	5.09×10^{-1}	2.06×10^{-2}	6.26×10^{-1}	(a)	5.12×10^{-1}	2.34×10^{-1}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility, 200-East Area	2009	2100	200E	3.34×10^{-2}	4.93×10^{-3}	1.89×10^{-4}	5.79×10^{-3}	(a)	9.23×10^{-3}	3.42×10^{-3}
Integrated Disposal Facility, 200-West Area	2009	2050	200W	8.78×10^{-3}	1.30×10^{-3}	4.98×10^{-5}	1.52×10^{-3}	(a)	2.43×10^{-3}	8.99×10^{-4}
River Protection Project Disposal Facility	2022	2100	200EW	1.33	2.24×10^{-1}	7.59×10^{-3}	2.37×10^{-1}	(a)	8.36×10^{-1}	2.68×10^{-1}
Closure										
Integrated Disposal Facility, 200-East Area	2101	2102	200E	7.09×10^{-1}	1.59×10^{-1}	4.15×10^{-3}	1.37×10^{-1}	(a)	1.11	3.29×10^{-1}
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.87×10^{-1}	4.19×10^{-2}	1.09×10^{-3}	3.61×10^{-2}	(a)	2.91×10^{-1}	8.65×10^{-2}
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	200E	3.74×10^{-3}	1.14×10^{-3}	2.26×10^{-5}	7.98×10^{-4}	(a)	1.08×10^{-2}	3.14×10^{-3}
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	9.83×10^{-4}	3.00×10^{-4}	5.95×10^{-6}	2.10×10^{-4}	(a)	2.85×10^{-3}	8.26×10^{-4}
River Protection Project Disposal Facility	2101	2102	200EW	1.74×10^{1}	3.90	1.02×10^{-1}	3.35	(a)	2.71×10^{1}	8.05
Postclosure care, River Protection Project Disposal Facility	2103	2202	200EW	9.14×10^{-2}	2.79×10^{-2}	5.53×10^{-4}	1.95×10^{-2}	(a)	2.65×10^{-1}	7.68×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–61. Waste Management Alternative 3, Disposal Group 3, Criteria Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction								
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	2.65×10^{1}	9.48×10^{1}	6.08×10^{2}	4.04×10^{-2}	8.02
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	6.98	2.50×10^{1}	1.60×10^{2}	1.06×10^{-2}	2.11
River Protection Project Disposal Facility	2019	2021	200EW	6.49×10^{2}	2.32×10^{3}	1.49×10^{4}	9.89×10^{-1}	1.96×10^{2}
Operations								
Low-level radioactive waste burial grounds	2007	2050	200W	3.46	1.06×10^{1}	8.17×10^{1}	5.17×10^{-3}	9.17×10^{-1}
Integrated Disposal Facility, 200-East Area	2009	2165	200E	8.21	2.11×10^{1}	6.03×10^{2}	1.21×10^{-2}	1.90
Integrated Disposal Facility, 200-West Area	2009	2050	200W	2.16	5.56	1.59×10^{2}	3.18×10^{-3}	4.99×10^{-1}
River Protection Project Disposal Facility	2022	2165	200EW	5.62×10^{2}	8.35×10^{2}	1.27×10^{3}	7.95×10^{-1}	8.59×10^{1}
Closure								
Integrated Disposal Facility, 200-East Area	2166	2167	200E	6.31×10^{2}	4.39×10^{2}	9.55×10^{1}	8.68×10^{-1}	6.07×10^{1}
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.66×10^{2}	1.15×10^{2}	2.51×10^{1}	2.28×10^{-1}	1.60×10^{1}
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	200E	5.83	2.25	1.57×10^{-1}	7.92×10^{-3}	4.32×10^{-1}
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	1.54	5.92×10^{-1}	4.13×10^{-2}	2.09×10^{-3}	1.14×10^{-1}
River Protection Project Disposal Facility	2166	2167	200EW	1.54×10^{4}	1.07×10^{4}	2.34×10^{3}	2.12×10^{1}	1.49×10^{3}
Postclosure care, River Protection Project Disposal Facility	2168	2267	200EW	1.43×10^{2}	5.51×10^{1}	3.84	1.94×10^{-1}	1.06×10^{1}

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–62. Waste Management Alternative 3, Disposal Group 3, Toxic Pollutant Emissions

Facility/System	Start Year	End Year	Location	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction										
Integrated Disposal Facility, 200-East Area	2006	2008	200EW	1.49×10^{-1}	2.08×10^{-2}	8.44×10^{-4}	2.56×10^{-2}	(a)	2.09×10^{-2}	9.54×10^{-3}
Integrated Disposal Facility, 200-West Area	2006	2008	200EW	3.93×10^{-2}	5.48×10^{-3}	2.22×10^{-4}	6.74×10^{-3}	(a)	5.50×10^{-3}	2.51×10^{-3}
River Protection Project Disposal Facility	2019	2021	200EW	3.65	5.09×10^{-1}	2.06×10^{-2}	6.26×10^{-1}	(a)	5.12×10^{-1}	2.34×10^{-1}
Operations										
Low-level radioactive waste burial grounds	2007	2050	200W	1.67×10^{-2}	2.38×10^{-3}	9.42×10^{-5}	2.87×10^{-3}	(a)	3.33×10^{-3}	1.34×10^{-3}
Integrated Disposal Facility, 200-East Area	2009	2165	200E	3.34×10^{-2}	4.93×10^{-3}	1.89×10^{-4}	5.79×10^{-3}	(a)	9.23×10^{-3}	3.42×10^{-3}
Integrated Disposal Facility, 200-West Area	2009	2050	200W	8.78×10^{-3}	1.30×10^{-3}	4.98×10^{-5}	1.52×10^{-3}	(a)	2.43×10^{-3}	8.99×10^{-4}
River Protection Project Disposal Facility	2022	2165	200EW	1.33	2.24×10^{-1}	7.59×10^{-3}	2.37×10^{-1}	(a)	8.36×10^{-1}	2.68×10^{-1}
Closure										
Integrated Disposal Facility, 200-East Area	2166	2167	200E	7.09×10^{-1}	1.59×10^{-1}	4.15×10^{-3}	1.37×10^{-1}	(a)	1.11	3.29×10^{-1}
Integrated Disposal Facility, 200-West Area	2051	2052	200W	1.87×10^{-1}	4.19×10^{-2}	1.09×10^{-3}	3.61×10^{-2}	(a)	2.91×10^{-1}	8.65×10^{-2}
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	200E	3.74×10^{-3}	1.14×10^{-3}	2.26×10^{-5}	7.98×10^{-4}	(a)	1.08×10^{-2}	3.14×10^{-3}
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	200W	9.83×10^{-4}	3.00×10^{-4}	5.95×10^{-6}	2.10×10^{-4}	(a)	2.85×10^{-3}	8.26×10^{-4}
River Protection Project Disposal Facility	2166	2167	200EW	1.74×10^{1}	3.90	1.02×10^{-1}	3.35	(a)	2.71×10^{1}	8.05
Postclosure care, River Protection Project Disposal Facility	2168	2267	200EW	9.14×10^{-2}	2.79×10^{-2}	5.53×10^{-4}	1.95×10^{-2}	(a)	2.65×10^{-1}	7.68×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: 200E=200-East Area; 200W=200-West Area; 200EW=200-East and 200-West Areas.

Source: SAIC 2010c.

Table G–63. Tank Closure Alternative 1 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2008	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2008	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2008	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2008	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Operations							
Routine operations	2006	2008	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Closure							
Administrative controls	2008	2107	5.99×10^{1}	2.81×10^{2}	2.54×10^{1}	9.07×10^{-2}	2.27×10^{1}

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–64. Tank Closure Alternative 1 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2008	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Operations									
Routine operations	2006	2008	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Closure									
Administrative controls	2008	2107	4.35×10^{-1}	6.62×10^{-2}	(a)	(a)	(a)	2.90×10^{-2}	2.00×10^{-2}

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010a.

Table G–65. Tank Closure Alternative 2A Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Underground transfer lines	2009	2009	(a)	(a)	(a)	(a)	(a)
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Cesium and Strontium Capsule Processing Facility	2088	2091	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Tank risers	2013	2056	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2040	2041	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2065	2066	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2013	2054	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2065	2076	2.17×10^{1}	1.01×10^{2}	8.26×10^{2}	3.42×10^{-2}	8.21
Underground transfer line replacement	2044	2044	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Effluent Treatment Facility replacement 2	2053	2055	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Evaporator replacement 2	2040	2042	3.61	2.95	2.80×10^{2}	4.98×10^{-3}	3.79×10^{-1}
Evaporator replacement 3	2065	2067	3.61	2.95	2.80×10^{2}	4.98×10^{-3}	3.79×10^{-1}
Operations							
IHLW Interim Storage Facility	2018	2093	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2092	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2092	5.99×10^{1}	2.81×10^{2}	2.54×10^{1}	9.07×10^{-2}	2.27×10^{1}
Retrieval operations	2006	2092	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2092	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2092	5.56	2.58×10^{1}	1.37×10^{2}	8.77×10^{-3}	2.11
Waste Treatment Plant, cesium and strontium capsules	2093	2093	5.56	2.58×10^{1}	1.37×10^{2}	8.77×10^{-3}	2.11

Table G–65. Tank Closure Alternative 2A Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations *(continued)*							
Cesium and Strontium Capsule Processing Facility	2092	2093	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility	2018	2192	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2095	6.46×10^{2}	1.68×10^{1}	2.83×10^{3}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2093	3.22	8.38×10^{-2}	8.51×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2102	(a)	(a)	4.24×10^{2}	(a)	1.20×10^{1}
Deactivation							
IHLW Interim Storage Facility	2094	2094	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	5.56×10^{-1}	2.58	1.37×10^{1}	8.77×10^{-4}	2.11×10^{-1}
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)
Administrative controls	2094	2193	1.63×10^{1}	7.71×10^{-1}	8.44×10^{-2}	2.22×10^{-4}	8.07×10^{-1}
Waste Treatment Plant replacement	2094	2095	5.56×10^{-1}	2.58	1.37×10^{1}	8.77×10^{-4}	2.11×10^{-1}
Cesium and Strontium Capsule Processing Facility	2094	2094	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2056	2056	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 2	2096	2096	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2043	2043	7.89×10^{-1}	2.05×10^{-2}	8.25	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 2	2068	2068	7.89×10^{-1}	2.05×10^{-2}	8.25	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 3	2094	2094	7.89×10^{-1}	2.05×10^{-2}	8.25	1.06×10^{-3}	3.81×10^{-2}
Closure							
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–66. Tank Closure Alternative 2A Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Underground transfer lines	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Cesium and Strontium Capsule Processing Facility	2088	2091	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Tank risers	2013	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2065	2066	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2013	2054	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2065	2076	1.58×10^{-1}	2.13×10^{-2}	8.92×10^{-4}	4.48×10^{-2}	(a)	9.33×10^{-3}	6.50×10^{-3}
Underground transfer line replacement	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Effluent Treatment Facility replacement 2	2053	2055	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Evaporator replacement 2	2040	2042	4.74×10^{-3}	9.92×10^{-4}	7.95×10^{-4}	8.97×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 3	2065	2067	4.74×10^{-3}	9.92×10^{-4}	7.95×10^{-4}	8.97×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Operations									
IHLW Interim Storage Facility	2018	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2092	4.35×10^{-1}	6.62×10^{-2}	(a)	(a)	(a)	2.90×10^{-2}	2.00×10^{-2}
Retrieval operations	2006	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2092	4.05×10^{-2}	5.46×10^{-3}	2.29×10^{-4}	6.90×10^{-3}	(a)	2.39×10^{-3}	1.67×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2093	2093	4.05×10^{-2}	5.46×10^{-3}	2.29×10^{-4}	6.90×10^{-3}	(a)	2.39×10^{-3}	1.67×10^{-3}

Table G–66. Tank Closure Alternative 2A Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations *(continued)*									
Cesium and Strontium Capsule Processing Facility	2092	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2192	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2095	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2093	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2102	1.78×10^{-1}	3.12×10^{-2}	1.02×10^{-3}	3.21×10^{-2}	(a)	1.32×10^{-1}	4.15×10^{-2}
Deactivation									
IHLW Interim Storage Facility	2094	2094	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	4.05×10^{-3}	5.46×10^{-4}	2.29×10^{-5}	6.90×10^{-4}	(a)	2.39×10^{-4}	1.67×10^{-4}
Modified sluicing retrieval system	2013	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Administrative controls	2094	2193	1.81×10^{-3}	2.18×10^{-3}	(a)	(a)	(a)	3.18×10^{-2}	9.07×10^{-3}
Waste Treatment Plant replacement	2094	2095	4.05×10^{-3}	5.46×10^{-4}	2.29×10^{-5}	6.90×10^{-4}	(a)	2.39×10^{-4}	1.67×10^{-4}
Cesium and Strontium Capsule Processing Facility	2094	2094	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2056	2056	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 2	2096	2096	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2043	2043	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 2	2068	2068	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 3	2094	2094	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–67. Tank Closure Alternative 2B Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Low-Activity Waste Vitrification Facility	2008	2017	1.54	7.16	5.43×10^{1}	2.43×10^{-3}	5.84×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)
Effluent Treatment replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–67. Tank Closure Alternative 2B Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Waste Treatment Plant, cesium and strontium capsules	2040	2040	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	6.46×10^{2}	1.68×10^{1}	4.03×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2043	3.22	8.38×10^{-2}	3.81×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)
Deactivation							
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	2.34	1.08×10^{1}	5.07×10^{1}	3.69×10^{-3}	8.86×10^{-1}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement	2046	2046	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement	2044	2044	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}

Table G–67. Tank Closure Alternative 2B Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure							
Ancillary equipment grouting	2013	2037	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) construction	2032	2033	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2034	2043	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	1.70×10^{1}	7.88×10^{1}	6.68×10^{2}	2.68×10^{-2}	6.43
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–68. Tank Closure Alternative 2B Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Low-Activity Waste Vitrification Facility	2008	2017	1.13×10^{-2}	1.51×10^{-3}	6.35×10^{-5}	1.92×10^{-3}	(a)	6.64×10^{-4}	4.63×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–68. Tank Closure Alternative 2B Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2043	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	1.71×10^{-2}	2.30×10^{-3}	9.62×10^{-5}	2.90×10^{-3}	(a)	1.01×10^{-3}	7.01×10^{-4}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2046	2046	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2044	2044	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}

Table G–68. Tank Closure Alternative 2B Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure									
Ancillary equipment grouting	2013	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) construction	2032	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2034	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	1.24×10^{-1}	3.10×10^{-1}	1.30×10^{-2}	3.92×10^{-1}	(a)	1.36×10^{-1}	9.47×10^{-2}
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–69. Tank Closure Alternative 3A Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	5.81×10^{-1}	2.69	1.67×10^{1}	9.17×10^{-4}	2.20×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	4.73×10^{-1}	2.20	1.36×10^{1}	7.47×10^{-4}	1.79×10^{-1}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2016	2017	1.54	7.15	4.47×10^{1}	2.43×10^{-3}	5.83×10^{-1}
Solid-Liquid Separations Facility	2016	2017	2.41×10^{-1}	1.12	8.32	3.80×10^{-4}	9.13×10^{-2}
Bulk Vitrification Facility, 200-East Area	2016	2017	1.54	7.15	4.47×10^{1}	2.43×10^{-3}	5.83×10^{-1}
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–69. Tank Closure Alternative 3A Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	7.61	3.53×10^{1}	1.82×10^{2}	1.20×10^{-2}	2.88
Waste Treatment Plant, cesium and strontium capsules	2040	2040	7.61	3.53×10^{1}	1.82×10^{2}	1.20×10^{-2}	2.88
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	2.47	1.15×10^{1}	6.31×10^{1}	3.90×10^{-3}	9.36×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.86×10^{-2}	8.63×10^{-2}	4.75×10^{-1}	2.94×10^{-5}	7.05×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2018	2039	3.80	1.76×10^{1}	1.01×10^{2}	6.00×10^{-3}	1.44
Solid-Liquid Separations Facility	2018	2039	1.09	5.07	2.79×10^{1}	1.72×10^{-3}	4.14×10^{-1}
Bulk Vitrification Facility, 200-East Area	2018	2039	6.26	2.91×10^{1}	1.67×10^{2}	9.89×10^{-3}	2.37
Effluent Treatment Facility	2006	2042	6.46×10^{2}	1.68×10^{1}	3.37×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2040	3.22	8.38×10^{-2}	5.14×10^{-3}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)
Deactivation							
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	7.61×10^{-1}	3.53	1.82×10^{1}	1.20×10^{-3}	2.88×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}

Table G–69. Tank Closure Alternative 3A Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*							
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	2.47×10^{-1}	1.15	6.31	3.90×10^{-4}	9.36×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.86×10^{-3}	8.63×10^{-3}	4.75×10^{-2}	2.94×10^{-6}	7.05×10^{-4}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2040	2041	3.80×10^{-1}	1.76	1.01×10^{1}	6.00×10^{-4}	1.44×10^{-1}
Solid-Liquid Separations Facility	2040	2041	1.09×10^{-1}	5.07×10^{-1}	2.79	1.72×10^{-4}	4.14×10^{-2}
Bulk Vitrification Facility, 200-East Area	2040	2041	6.26×10^{-1}	2.91	1.67×10^{1}	9.89×10^{-4}	2.37×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement	2043	2043	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2041	2041	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.70×10^{1}	7.88×10^{1}	6.68×10^{2}	2.68×10^{-2}	6.43
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–70. Tank Closure Alternative 3A Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	4.24×10^{-3}	5.70×10^{-4}	2.39×10^{-5}	7.21×10^{-4}	(a)	2.50×10^{-4}	1.74×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	3.45×10^{-3}	4.64×10^{-4}	1.95×10^{-5}	5.87×10^{-4}	(a)	2.04×10^{-4}	1.42×10^{-4}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2016	2017	1.12×10^{-2}	3.68×10^{-2}	6.34×10^{-5}	1.91×10^{-3}	(a)	1.61×10^{-2}	1.12×10^{-2}
Solid-Liquid Separations Facility	2016	2017	1.76×10^{-3}	2.37×10^{-4}	9.91×10^{-6}	2.99×10^{-4}	(a)	1.04×10^{-4}	7.23×10^{-5}
Bulk Vitrification Facility, 200-East Area	2016	2017	1.12×10^{-2}	3.68×10^{-2}	6.34×10^{-5}	1.91×10^{-3}	(a)	1.61×10^{-2}	1.12×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–70. Tank Closure Alternative 3A Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	5.55×10^{-2}	7.47×10^{-3}	3.13×10^{-4}	9.45×10^{-3}	(a)	3.28×10^{-3}	2.28×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	5.55×10^{-2}	7.47×10^{-3}	3.13×10^{-4}	9.45×10^{-3}	(a)	3.28×10^{-3}	2.28×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	1.80×10^{-2}	2.43×10^{-3}	1.02×10^{-4}	3.07×10^{-3}	(a)	1.06×10^{-3}	7.41×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.36×10^{-4}	1.83×10^{-5}	7.65×10^{-7}	2.31×10^{-5}	(a)	8.01×10^{-6}	5.58×10^{-6}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2018	2039	2.77×10^{-2}	9.08×10^{-2}	1.56×10^{-4}	4.72×10^{-3}	(a)	3.98×10^{-2}	2.77×10^{-2}
Solid-Liquid Separations Facility	2018	2039	7.97×10^{-3}	1.07×10^{-3}	4.49×10^{-5}	1.36×10^{-3}	(a)	4.70×10^{-4}	3.27×10^{-4}
Bulk Vitrification Facility, 200-East Area	2018	2039	4.57×10^{-2}	1.50×10^{-1}	2.58×10^{-4}	7.78×10^{-3}	(a)	6.56×10^{-2}	4.57×10^{-2}
Effluent Treatment Facility	2006	2042	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2040	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–70. Tank Closure Alternative 3A Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation (*continued*)									
Waste Treatment Plant	2041	2042	5.55×10^{-3}	7.47×10^{-4}	3.13×10^{-5}	9.45×10^{-4}	(a)	3.28×10^{-4}	2.28×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	1.80×10^{-3}	2.43×10^{-4}	1.02×10^{-5}	3.07×10^{-4}	(a)	1.06×10^{-4}	7.41×10^{-5}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.36×10^{-5}	1.83×10^{-6}	7.65×10^{-8}	2.31×10^{-6}	(a)	8.01×10^{-7}	5.58×10^{-7}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2040	2041	2.77×10^{-3}	9.08×10^{-3}	1.56×10^{-5}	4.72×10^{-4}	(a)	3.98×10^{-3}	2.77×10^{-3}
Solid-Liquid Separations Facility	2040	2041	7.97×10^{-4}	1.07×10^{-4}	4.49×10^{-6}	1.36×10^{-4}	(a)	4.70×10^{-5}	3.27×10^{-5}
Bulk Vitrification Facility, 200-East Area	2040	2041	4.57×10^{-2}	1.50×10^{-1}	2.58×10^{-4}	7.78×10^{-3}	(a)	6.56×10^{-2}	4.57×10^{-2}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement	2043	2043	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2041	2041	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.24×10^{-1}	3.10×10^{-1}	1.30×10^{-2}	3.92×10^{-1}	(a)	1.36×10^{-1}	9.47×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–71. Tank Closure Alternative 3B Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	5.81×10^{-1}	2.69	1.67×10^{1}	9.17×10^{-4}	2.20×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	4.73×10^{-1}	2.20	1.36×10^{1}	7.47×10^{-4}	1.79×10^{-1}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2016	2017	1.05	4.89	3.05×10^{1}	1.66×10^{-3}	3.99×10^{-1}
Solid-Liquid Separations Facility	2016	2017	2.41×10^{-1}	1.12	8.32	3.80×10^{-4}	9.13×10^{-2}
Cast Stone Facility, 200-East Area	2016	2017	1.05	4.89	3.05×10^{1}	1.66×10^{-3}	3.99×10^{-1}
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	4.74×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–71. Tank Closure Alternative 3B Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	8.08	3.75×10^{1}	1.92×10^{2}	1.28×10^{-2}	3.06
Waste Treatment Plant, cesium and strontium capsules	2040	2040	7.61	3.53×10^{1}	1.82×10^{2}	1.20×10^{-2}	2.88
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	2.47	1.15×10^{1}	6.31×10^{1}	3.90×10^{-3}	9.36×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.86×10^{-2}	8.63×10^{-2}	4.75×10^{-1}	2.94×10^{-5}	7.05×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2018	2039	9.98	4.63×10^{1}	2.52×10^{2}	1.58×10^{-2}	3.78
Solid-Liquid Separations Facility	2018	2039	1.09	5.07	2.79×10^{1}	1.72×10^{-3}	4.14×10^{-1}
Cast Stone Facility, 200-East Area	2018	2039	1.68×10^{1}	7.81×10^{1}	4.24×10^{2}	2.66×10^{-2}	6.38
Effluent Treatment Facility	2006	2042	6.46×10^{2}	1.68×10^{1}	3.37×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2040	3.22	8.38×10^{-2}	1.35×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)

Table G–71. Tank Closure Alternative 3B Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation							
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	8.08×10^{-1}	3.75	1.92×10^{1}	1.28×10^{-3}	3.06×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	2.47×10^{-1}	1.15	6.31	3.90×10^{-4}	9.36×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.86×10^{-3}	8.63×10^{-3}	4.75×10^{-2}	2.94×10^{-6}	7.05×10^{-4}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2040	2041	9.98×10^{-1}	4.63	2.52×10^{1}	1.58×10^{-3}	3.78×10^{-1}
Solid-Liquid Separations Facility	2040	2041	1.09×10^{-1}	5.07×10^{-1}	2.79	1.72×10^{-4}	3.78×10^{-1}
Cast Stone Facility, 200-East Area	2040	2041	1.68	7.81	4.24×10^{1}	2.66×10^{-3}	6.38×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2043	2043	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2041	2041	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.70×10^{1}	7.88×10^{1}	6.68×10^{2}	2.68×10^{-2}	6.43
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–72. Tank Closure Alternative 3B Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	4.24×10^{-3}	5.70×10^{-4}	2.39×10^{-5}	7.21×10^{-4}	(a)	2.50×10^{-4}	1.74×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	3.45×10^{-3}	4.64×10^{-4}	1.95×10^{-5}	5.87×10^{-4}	(a)	2.04×10^{-4}	1.42×10^{-4}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2016	2017	7.69×10^{-3}	1.03×10^{-3}	4.33×10^{-5}	1.31×10^{-3}	(a)	4.53×10^{-4}	3.16×10^{-4}
Solid-Liquid Separations Facility	2016	2017	1.76×10^{-3}	2.37×10^{-4}	9.91×10^{-6}	2.99×10^{-4}	(a)	1.04×10^{-4}	7.23×10^{-5}
Cast Stone Facility, 200-East Area	2016	2017	7.69×10^{-3}	1.03×10^{-3}	4.33×10^{-5}	1.31×10^{-3}	(a)	4.53×10^{-4}	3.16×10^{-4}
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–72. Tank Closure Alternative 3B Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	5.90×10^{-2}	7.94×10^{-3}	3.33×10^{-4}	1.00×10^{-2}	(a)	3.48×10^{-3}	2.42×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	5.55×10^{-2}	7.47×10^{-3}	3.13×10^{-4}	9.45×10^{-3}	(a)	3.28×10^{-3}	2.28×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	1.80×10^{-2}	2.43×10^{-3}	1.02×10^{-4}	3.07×10^{-3}	(a)	1.06×10^{-3}	7.41×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.36×10^{-4}	1.83×10^{-5}	7.65×10^{-7}	2.31×10^{-5}	(a)	8.01×10^{-6}	5.58×10^{-6}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2018	2039	7.29×10^{-2}	9.81×10^{-3}	4.11×10^{-4}	1.24×10^{-2}	(a)	4.30×10^{-3}	3.00×10^{-3}
Solid-Liquid Separations Facility	2018	2039	7.97×10^{-3}	1.07×10^{-3}	4.49×10^{-5}	1.36×10^{-3}	(a)	4.70×10^{-4}	3.27×10^{-4}
Cast Stone Facility, 200-East Area	2018	2039	1.23×10^{-1}	1.65×10^{-2}	6.93×10^{-4}	2.09×10^{-2}	(a)	7.25×10^{-3}	5.05×10^{-3}
Effluent Treatment Facility	2006	2042	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2040	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–72. Tank Closure Alternative 3B Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	5.90×10^{-3}	7.94×10^{-4}	3.33×10^{-5}	1.00×10^{-3}	(a)	3.48×10^{-4}	2.42×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	1.80×10^{-3}	2.43×10^{-4}	1.02×10^{-5}	3.07×10^{-4}	(a)	1.06×10^{-4}	7.41×10^{-5}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.36×10^{-5}	1.83×10^{-6}	7.65×10^{-8}	2.31×10^{-6}	(a)	8.01×10^{-7}	5.58×10^{-7}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2040	2041	7.29×10^{-3}	9.81×10^{-4}	4.11×10^{-5}	1.24×10^{-3}	(a)	4.30×10^{-4}	3.00×10^{-4}
Solid-Liquid Separations Facility	2040	2041	7.97×10^{-4}	1.07×10^{-4}	4.49×10^{-6}	1.36×10^{-4}	(a)	4.70×10^{-5}	3.27×10^{-5}
Cast Stone Facility, 200-East Area	2040	2041	1.23×10^{-2}	1.65×10^{-3}	6.93×10^{-5}	2.09×10^{-3}	(a)	7.25×10^{-4}	5.05×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2043	2043	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2041	2041	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.24×10^{-1}	3.10×10^{-1}	1.30×10^{-2}	3.92×10^{-1}	(a)	1.36×10^{-1}	9.47×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–73. Tank Closure Alternative 3C Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	5.81×10^{-1}	2.69	1.67×10^{1}	9.17×10^{-4}	2.20×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	4.73×10^{-1}	2.20	1.36×10^{1}	7.47×10^{-4}	1.79×10^{-1}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2016	2017	3.52	1.63×10^{1}	1.02×10^{2}	5.55×10^{-3}	1.33
Solid-Liquid Separations Facility	2016	2017	2.41×10^{-1}	1.12	8.32	3.80×10^{-4}	9.13×10^{-2}
Steam Reforming Facility, 200-East Area	2016	2017	7.02	3.26×10^{1}	2.04×10^{2}	1.11×10^{-2}	2.66
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–73. Tank Closure Alternative 3C Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	7.61	3.53×10^{1}	1.82×10^{2}	1.20×10^{-2}	2.88
Waste Treatment Plant, cesium and strontium capsules	2040	2040	7.61	3.53×10^{1}	1.82×10^{2}	1.20×10^{-2}	2.88
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	2.47	1.15×10^{1}	6.31×10^{1}	3.90×10^{-3}	9.36×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.86×10^{-2}	8.63×10^{-2}	4.75×10^{-1}	2.94×10^{-5}	7.05×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2018	2039	1.20×10^{2}	5.59×10^{2}	2.80×10^{3}	1.90×10^{-1}	4.56×10^{1}
Solid-Liquid Separations Facility	2018	2039	1.09	5.07	2.79×10^{1}	1.72×10^{-3}	4.14×10^{-1}
Steam Reforming Facility, 200-East Area	2018	2039	1.05×10^{2}	4.87×10^{2}	2.44×10^{3}	1.66×10^{-1}	3.98×10^{1}
Effluent Treatment Facility	2006	2042	6.46×10^{2}	1.68×10^{1}	3.37×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2040	3.22	8.38×10^{-2}	1.35×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	8.48×10^{2}	(a)	(a)
Deactivation							
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)

Table G–73. Tank Closure Alternative 3C Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation, *(continued)*							
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	7.61×10^{-1}	3.53	1.82×10^{1}	1.20×10^{-3}	2.88×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	2.47×10^{-1}	1.15	6.31	3.90×10^{-4}	9.36×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.86×10^{-3}	8.63×10^{-3}	4.75×10^{-2}	2.94×10^{-6}	7.05×10^{-4}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2040	2041	1.20×10^{1}	5.59×10^{1}	2.80×10^{2}	1.90×10^{-2}	4.56
Solid-Liquid Separations Facility	2040	2041	1.09×10^{-1}	5.07×10^{-1}	2.79	1.72×10^{-4}	4.14×10^{-2}
Steam Reforming Facility, 200-East Area	2040	2041	1.05×10^{1}	4.87×10^{1}	2.44×10^{2}	1.66×10^{-2}	3.98
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2043	2043	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2041	2041	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.70×10^{1}	7.88×10^{1}	6.68×10^{2}	2.68×10^{-2}	6.43
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–74. Tank Closure Alternative 3C Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	4.24×10^{-3}	5.70×10^{-4}	2.39×10^{-5}	7.21×10^{-4}	(a)	2.50×10^{-4}	1.74×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	3.45×10^{-3}	4.64×10^{-4}	1.95×10^{-5}	5.87×10^{-4}	(a)	2.04×10^{-4}	1.42×10^{-4}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2016	2017	2.57×10^{-2}	3.45×10^{-3}	1.45×10^{-4}	4.37×10^{-3}	(a)	1.51×10^{-3}	1.05×10^{-3}
Solid-Liquid Separations Facility	2016	2017	1.76×10^{-3}	2.37×10^{-4}	9.91×10^{-6}	2.99×10^{-4}	(a)	1.04×10^{-4}	7.23×10^{-5}
Steam Reforming Facility, 200-East Area	2016	2017	5.13×10^{-2}	6.90×10^{-3}	2.89×10^{-4}	8.72×10^{-3}	(a)	3.02×10^{-3}	2.11×10^{-3}
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–74. Tank Closure Alternative 3C Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	5.55×10^{-2}	7.47×10^{-3}	3.13×10^{-4}	9.45×10^{-3}	(a)	3.28×10^{-3}	2.28×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	5.55×10^{-2}	7.47×10^{-3}	3.13×10^{-4}	9.45×10^{-3}	(a)	3.28×10^{-3}	2.28×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	1.80×10^{-2}	2.43×10^{-3}	1.02×10^{-4}	3.07×10^{-3}	(a)	1.06×10^{-3}	7.41×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.36×10^{-4}	1.83×10^{-5}	7.65×10^{-7}	2.31×10^{-5}	(a)	8.01×10^{-6}	5.58×10^{-6}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2018	2039	8.79×10^{-1}	1.18×10^{-1}	4.96×10^{-3}	1.50×10^{-1}	(a)	5.18×10^{-2}	3.61×10^{-2}
Solid-Liquid Separations Facility	2018	2039	7.97×10^{-3}	1.07×10^{-3}	4.49×10^{-5}	1.36×10^{-3}	(a)	4.70×10^{-4}	3.27×10^{-4}
Steam Reforming Facility, 200-East Area	2018	2039	7.66×10^{-1}	1.03×10^{-1}	4.32×10^{-3}	1.30×10^{-1}	(a)	4.52×10^{-2}	3.15×10^{-2}
Effluent Treatment Facility	2006	2042	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2040	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–74. Tank Closure Alternative 3C Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	5.55×10^{-3}	7.47×10^{-4}	3.13×10^{-5}	9.45×10^{-4}	(a)	3.28×10^{-4}	2.28×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	1.80×10^{-3}	2.43×10^{-4}	1.02×10^{-5}	3.07×10^{-4}	(a)	1.06×10^{-4}	7.41×10^{-5}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.36×10^{-5}	1.83×10^{-6}	7.65×10^{-8}	2.31×10^{-6}	(a)	8.01×10^{-7}	5.58×10^{-7}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2040	2041	8.79×10^{-2}	1.18×10^{-2}	4.96×10^{-4}	1.50×10^{-2}	(a)	5.18×10^{-3}	3.61×10^{-3}
Solid-Liquid Separations Facility	2040	2041	7.97×10^{-4}	1.07×10^{-4}	4.49×10^{-6}	1.36×10^{-4}	(a)	4.70×10^{-5}	3.27×10^{-5}
Steam Reforming Facility, 200-East Area	2040	2041	7.66×10^{-2}	1.03×10^{-2}	4.32×10^{-4}	1.30×10^{-2}	(a)	4.52×10^{-3}	3.15×10^{-3}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2043	2043	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2041	2041	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	1.24×10^{-1}	3.10×10^{-1}	1.30×10^{-2}	3.92×10^{-1}	(a)	1.36×10^{-1}	9.47×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–75. Tank Closure Alternative 4 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2022	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Cesium and Strontium Capsule Processing Facility	2038	2041	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	5.81×10^{-1}	2.69	1.67×10^{1}	9.17×10^{-4}	2.20×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	4.73×10^{-1}	2.20	1.36×10^{1}	7.47×10^{-4}	1.79×10^{-1}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.54	7.15	4.47×10^{1}	2.43×10^{-3}	5.83×10^{-1}
Solid-Liquid Separations Facility	2016	2017	2.41×10^{-1}	1.12	8.32	3.80×10^{-4}	9.13×10^{-2}
Cast Stone Facility	2016	2017	1.05	4.89	3.05×10^{1}	1.66×10^{-3}	3.99×10^{-1}
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–75. Tank Closure Alternative 4 Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2043	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2042	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2042	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2042	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2042	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2042	7.24	3.36×10^{1}	1.74×10^{2}	1.14×10^{-2}	2.74
Waste Treatment Plant, cesium and strontium capsules	2043	2043	7.24	3.36×10^{1}	1.74×10^{2}	1.14×10^{-2}	2.74
Cesium and Strontium Capsule Processing Facility	2042	2043	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2144	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	2.47	1.15×10^{1}	6.31×10^{1}	3.90×10^{-3}	9.36×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.86×10^{-2}	8.63×10^{-2}	4.75×10^{-1}	2.94×10^{-5}	7.05×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	3.80	1.76×10^{1}	1.01×10^{2}	6.00×10^{-3}	1.44
Solid-Liquid Separations Facility	2018	2039	1.09	5.07	2.79×10^{1}	1.72×10^{-3}	4.14×10^{-1}
Cast Stone Facility	2018	2039	1.68×10^{1}	7.81×10^{1}	4.24×10^{2}	2.66×10^{-2}	6.38
Effluent Treatment Facility	2006	2045	6.46×10^{2}	1.68×10^{1}	4.03×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2042	3.22	8.38×10^{-2}	1.51×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)
Deactivation							
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2044	2044	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	7.24×10^{-1}	3.36	1.74×10^{1}	1.14×10^{-3}	2.74×10^{-1}
Cesium and Strontium Capsule Processing Facility	2044	2044	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	2.47×10^{-1}	1.15	6.31	3.90×10^{-4}	9.36×10^{-2}

Table G–75. Tank Closure Alternative 4 Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*							
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.86×10^{-3}	8.63×10^{-3}	4.75×10^{-2}	2.94×10^{-6}	7.05×10^{-4}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2040	2041	3.80×10^{-1}	1.76	1.01×10^{1}	6.00×10^{-4}	1.44×10^{-1}
Solid-Liquid Separations Facility	2040	2041	1.09×10^{-1}	5.07×10^{-1}	2.79	1.72×10^{-4}	4.14×10^{-2}
Cast Stone Facility	2040	2041	1.68	7.81	4.24×10^{1}	2.66×10^{-3}	6.38×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2046	2046	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2043	2043	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Grout facility (tank-filling) construction	2031	2032	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2033	2042	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2043	2043	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2018	2021	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2042	2044	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Postclosure care	2045	2144	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2034	2041	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2034	2041	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2019	2021	3.06×10^{1}	1.42×10^{2}	9.68×10^{2}	4.84×10^{-2}	1.16×10^{1}
Preprocessing Facility operations	2022	2042	8.79×10^{-1}	4.08	1.91×10^{1}	1.39×10^{-3}	3.33×10^{-1}
Preprocessing Facility deactivation	2043	2043	9.23×10^{-2}	4.29×10^{-1}	2.00	1.46×10^{-4}	3.50×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–76. Tank Closure Alternative 4 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Cesium and Strontium Capsule Processing Facility	2038	2041	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	4.24×10^{-3}	5.70×10^{-4}	2.39×10^{-5}	7.21×10^{-4}	(a)	2.50×10^{-4}	1.74×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	3.45×10^{-3}	4.64×10^{-4}	1.95×10^{-5}	5.87×10^{-4}	(a)	2.04×10^{-4}	1.42×10^{-4}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.12×10^{-2}	3.68×10^{-2}	6.34×10^{-5}	1.91×10^{-3}	(a)	1.61×10^{-2}	1.12×10^{-2}
Solid-Liquid Separations Facility	2016	2017	1.76×10^{-3}	2.37×10^{-4}	9.91×10^{-6}	2.99×10^{-4}	(a)	1.04×10^{-4}	7.23×10^{-5}
Cast Stone Facility	2016	2017	7.69×10^{-3}	1.03×10^{-3}	4.33×10^{-5}	1.31×10^{-3}	(a)	4.53×10^{-4}	3.16×10^{-4}
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–76. Tank Closure Alternative 4 Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2042	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2042	5.28×10^{-2}	7.11×10^{-3}	2.98×10^{-4}	8.99×10^{-3}	(a)	3.12×10^{-3}	2.17×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2043	2043	5.28×10^{-2}	7.11×10^{-3}	2.98×10^{-4}	8.99×10^{-3}	(a)	3.12×10^{-3}	2.17×10^{-3}
Cesium and Strontium Capsule Processing Facility	2042	2043	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2144	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	1.80×10^{-2}	2.43×10^{-3}	1.02×10^{-4}	3.07×10^{-3}	(a)	1.06×10^{-3}	7.41×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.36×10^{-4}	1.83×10^{-5}	7.65×10^{-7}	2.31×10^{-5}	(a)	8.01×10^{-6}	5.58×10^{-6}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	2.77×10^{-2}	9.08×10^{-2}	1.56×10^{-4}	4.72×10^{-3}	(a)	3.98×10^{-2}	2.77×10^{-2}
Solid-Liquid Separations Facility	2018	2039	7.97×10^{-3}	1.07×10^{-3}	4.49×10^{-5}	1.36×10^{-3}	(a)	4.70×10^{-4}	3.27×10^{-4}
Cast Stone Facility	2018	2039	1.23×10^{-1}	1.65×10^{-2}	6.93×10^{-4}	2.09×10^{-2}	(a)	7.25×10^{-3}	5.05×10^{-3}
Effluent Treatment Facility	2006	2045	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2042	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	5.28×10^{-3}	7.11×10^{-4}	2.98×10^{-5}	8.99×10^{-4}	(a)	3.12×10^{-4}	2.17×10^{-4}
Cesium and Strontium Capsule Processing Facility	2044	2044	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	1.80×10^{-3}	2.43×10^{-4}	1.02×10^{-5}	3.07×10^{-4}	(a)	1.06×10^{-4}	7.41×10^{-5}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.36×10^{-5}	1.83×10^{-6}	7.65×10^{-8}	2.31×10^{-6}	(a)	8.01×10^{-7}	5.58×10^{-7}

Table G–76. Tank Closure Alternative 4 Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*									
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2040	2041	2.77×10^{-3}	9.08×10^{-3}	1.56×10^{-5}	4.72×10^{-4}	(a)	3.98×10^{-3}	2.77×10^{-3}
Solid-Liquid Separations Facility	2040	2041	7.97×10^{-4}	1.07×10^{-4}	4.49×10^{-6}	1.36×10^{-4}	(a)	4.70×10^{-5}	3.27×10^{-5}
Cast Stone Facility	2040	2041	1.23×10^{-2}	1.65×10^{-3}	6.93×10^{-5}	2.09×10^{-3}	(a)	7.25×10^{-4}	5.05×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2046	2046	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2043	2043	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Grout facility (tank-filling) construction	2031	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2033	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2018	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2042	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2045	2144	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2034	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2034	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2019	2021	2.24×10^{-1}	1.17×10^{-1}	4.90×10^{-3}	1.48×10^{-1}	(a)	5.12×10^{-2}	3.57×10^{-2}
Preprocessing Facility operations	2022	2042	6.42×10^{-3}	6.97×10^{-4}	2.92×10^{-5}	8.81×10^{-4}	(a)	3.05×10^{-4}	2.13×10^{-4}
Preprocessing Facility deactivation	2043	2043	6.74×10^{-4}	7.31×10^{-5}	3.07×10^{-6}	9.25×10^{-5}	(a)	3.21×10^{-5}	2.23×10^{-5}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–77. Tank Closure Alternative 5 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year): Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	8.57×10^{-1}	3.98	3.02×10^{1}	1.35×10^{-3}	3.25×10^{-1}
Cesium and Strontium Capsule Processing Facility	2029	2032	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2014	2019	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2016	2017	6.71	3.11×10^{1}	1.95×10^{2}	1.06×10^{-2}	2.54
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	5.81×10^{-1}	2.69	1.67×10^{1}	9.17×10^{-4}	2.20×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	4.73×10^{-1}	2.20	1.36×10^{1}	7.47×10^{-4}	1.79×10^{-1}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.54	7.15	4.47×10^{1}	2.43×10^{-3}	5.83×10^{-1}
Solid-Liquid Separations Facility	2016	2017	2.41×10^{-1}	1.12	8.32	3.80×10^{-4}	9.13×10^{-2}
Cast Stone Facility	2016	2017	1.05	4.89	3.05×10^{1}	1.66×10^{-3}	3.99×10^{-1}
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–77. Tank Closure Alternative 5 Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2034	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2033	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2033	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2033	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2033	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2033	2.69×10^{1}	1.25×10^{2}	6.46×10^{2}	4.24×10^{-2}	1.02×10^{1}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	2.69×10^{1}	1.25×10^{2}	6.46×10^{2}	4.24×10^{-2}	1.02×10^{1}
Cesium and Strontium Capsule Processing Facility	2033	2034	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Double-shell tank replacement	2020	2033	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2018	2033	6.19	2.87×10^{1}	1.51×10^{2}	9.77×10^{-3}	2.34
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2139	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	2.47	1.15×10^{1}	6.31×10^{1}	3.90×10^{-3}	9.36×10^{-1}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.86×10^{-2}	8.63×10^{-2}	4.75×10^{-1}	2.94×10^{-5}	7.05×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2033	5.22	2.42×10^{1}	1.38×10^{2}	8.25×10^{-3}	1.98
Solid-Liquid Separations Facility	2018	2033	1.50	6.97	3.83×10^{1}	2.37×10^{-3}	5.69×10^{-1}
Cast Stone Facility	2018	2033	2.31×10^{1}	1.07×10^{2}	5.84×10^{2}	3.65×10^{-2}	8.77
Effluent Treatment Facility	2006	2036	6.46×10^{2}	1.68×10^{1}	2.27×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2034	3.22	8.38×10^{-2}	9.25×10^{1}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)
Deactivation							
Sulfate Removal Facility	2034	2035	6.19×10^{-1}	2.87	1.51×10^{1}	9.77×10^{-4}	2.34×10^{-1}
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)

Table G–77. Tank Closure Alternative 5 Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*							
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	2.53	1.17×10^{1}	6.08×10^{1}	3.99×10^{-3}	9.58×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2035	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	2.47×10^{-1}	1.15	6.31	3.90×10^{-4}	9.36×10^{-2}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.86×10^{-3}	8.63×10^{-3}	4.75×10^{-2}	2.94×10^{-6}	7.05×10^{-4}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	5.22×10^{-1}	2.42	1.38×10^{1}	8.25×10^{-4}	1.98×10^{-1}
Solid-Liquid Separations Facility	2034	2035	1.50×10^{-1}	6.97×10^{-1}	3.83	2.37×10^{-4}	5.69×10^{-2}
Cast Stone Facility	2034	2035	2.31	1.07×10^{1}	5.84×10^{1}	3.65×10^{-3}	8.77×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2037	2037	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2035	2035	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Grout facility (tank-filling) construction	2022	2023	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2024	2033	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2034	2034	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2013	2033	(a)	(a)	(a)	(a)	(a)
Hanford barrier construction	2029	2039	1.80×10^{1}	8.37×10^{1}	7.09×10^{2}	2.85×10^{-2}	6.83
Decontamination and decommissioning of 10 selected facilities	2012	2022	(a)	(a)	(a)	(a)	(a)
Postclosure care	2040	2139	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–78. Tank Closure Alternative 5 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	6.25×10^{-3}	8.41×10^{-4}	3.53×10^{-5}	1.06×10^{-3}	(a)	3.69×10^{-4}	2.57×10^{-4}
Cesium and Strontium Capsule Processing Facility	2029	2032	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2016	2017	4.89×10^{-2}	6.59×10^{-3}	2.76×10^{-4}	8.33×10^{-3}	(a)	2.89×10^{-3}	2.01×10^{-3}
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	4.24×10^{-3}	5.70×10^{-4}	2.39×10^{-5}	7.21×10^{-4}	(a)	2.50×10^{-4}	1.74×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	3.45×10^{-3}	4.64×10^{-4}	1.95×10^{-5}	5.87×10^{-4}	(a)	2.04×10^{-4}	1.42×10^{-4}
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.12×10^{-2}	3.68×10^{-2}	6.34×10^{-5}	1.91×10^{-3}	(a)	1.61×10^{-2}	1.12×10^{-2}
Solid-Liquid Separations Facility	2016	2017	1.76×10^{-3}	2.37×10^{-4}	9.91×10^{-6}	2.99×10^{-4}	(a)	1.04×10^{-4}	7.23×10^{-5}
Cast Stone Facility	2016	2017	7.69×10^{-3}	1.03×10^{-3}	4.33×10^{-5}	1.31×10^{-3}	(a)	4.53×10^{-4}	3.16×10^{-4}
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–78. Tank Closure Alternative 5 Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2033	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2033	1.96×10^{-1}	2.64×10^{-2}	1.11×10^{-3}	3.34×10^{-2}	(a)	1.16×10^{-2}	8.06×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	1.96×10^{-1}	2.64×10^{-2}	1.11×10^{-3}	3.34×10^{-2}	(a)	1.16×10^{-2}	8.06×10^{-3}
Cesium and Strontium Capsule Processing Facility	2033	2034	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Double-shell tank replacement	2020	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2018	2033	4.52×10^{-2}	6.08×10^{-3}	2.55×10^{-4}	7.69×10^{-3}	(a)	2.66×10^{-3}	1.86×10^{-3}
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2139	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	1.80×10^{-2}	2.43×10^{-3}	1.02×10^{-4}	3.07×10^{-3}	(a)	1.06×10^{-3}	7.41×10^{-4}
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.36×10^{-4}	1.83×10^{-5}	7.65×10^{-7}	2.31×10^{-5}	(a)	8.01×10^{-6}	5.58×10^{-6}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2033	3.81×10^{-2}	1.25×10^{-1}	2.15×10^{-4}	6.49×10^{-3}	(a)	5.47×10^{-2}	3.81×10^{-2}
Solid-Liquid Separations Facility	2018	2033	1.10×10^{-2}	1.47×10^{-3}	6.18×10^{-5}	1.86×10^{-3}	(a)	6.46×10^{-4}	4.50×10^{-4}
Cast Stone Facility	2018	2033	1.69×10^{-1}	2.27×10^{-2}	9.52×10^{-4}	2.87×10^{-2}	(a)	9.96×10^{-3}	6.94×10^{-3}
Effluent Treatment Facility	2006	2036	5.00×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2034	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–78. Tank Closure Alternative 5 Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation									
Sulfate Removal Facility	2034	2035	4.52×10^{-3}	6.08×10^{-4}	2.55×10^{-5}	7.69×10^{-4}	(a)	2.66×10^{-4}	1.86×10^{-4}
Modified sluicing retrieval system	2013	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	1.85×10^{-2}	2.48×10^{-3}	1.04×10^{-4}	3.14×10^{-3}	(a)	1.09×10^{-3}	7.59×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2035	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	1.80×10^{-3}	2.43×10^{-4}	1.02×10^{-5}	3.07×10^{-4}	(a)	1.06×10^{-4}	7.41×10^{-5}
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	1.36×10^{-5}	1.83×10^{-6}	7.65×10^{-8}	2.31×10^{-6}	(a)	8.01×10^{-7}	5.58×10^{-7}
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	3.81×10^{-3}	1.25×10^{-2}	2.15×10^{-5}	6.49×10^{-4}	(a)	5.47×10^{-3}	3.81×10^{-3}
Solid-Liquid Separations Facility	2034	2035	1.10×10^{-3}	1.47×10^{-4}	6.18×10^{-6}	1.86×10^{-4}	(a)	6.46×10^{-5}	4.50×10^{-5}
Cast Stone Facility	2034	2035	1.69×10^{-2}	2.27×10^{-3}	9.52×10^{-5}	2.87×10^{-3}	(a)	9.96×10^{-4}	6.94×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2037	2037	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2035	2035	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Grout facility (tank-filling) construction	2022	2023	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2024	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2034	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2013	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Hanford barrier construction	2029	2039	1.32×10^{-1}	3.29×10^{-1}	1.38×10^{-2}	4.16×10^{-1}	(a)	1.44×10^{-1}	1.00×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2012	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2040	2139	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–79. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	8.67	4.02×10^{1}	1.08×10^{2}	1.37×10^{-2}	3.29
Cesium and Strontium Capsule Processing Facility	2158	2161	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	6.46	3.00×10^{1}	8.32×10^{1}	1.02×10^{-2}	2.45
Waste Treatment Plant replacement 2	2127	2138	6.46	3.00×10^{1}	8.32×10^{1}	1.02×10^{-2}	2.45
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, additional	2074	2160	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Effluent Treatment Facility replacement 2	2053	2055	1.24×10^{1}	1.33×10^{1}	1.89×10^{3}	1.73×10^{-2}	1.53

Table G–79. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction *(continued)*							
Effluent Treatment Facility replacement 3	2083	2085	1.24×10^{1}	1.33×10^{1}	1.89×10^{3}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 4	2113	2115	1.24×10^{1}	1.33×10^{1}	1.89×10^{3}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 5	2143	2145	1.24×10^{1}	1.33×10^{1}	1.89×10^{3}	1.73×10^{-2}	1.53
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Evaporator replacement 2	2040	2042	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 3	2065	2067	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 4	2090	2092	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 5	2115	2117	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 6	2140	2142	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)
Operations							
IHLW Interim Storage Facility	2018	2163	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2162	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	2.98×10^{1}	1.38×10^{2}	5.83×10^{2}	4.70×10^{-2}	1.13×10^{1}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	2.98×10^{1}	1.38×10^{2}	5.83×10^{2}	4.70×10^{-2}	1.13×10^{1}
Cesium and Strontium Capsule Processing Facility	2162	2163	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2042	2153	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	6.46×10^{2}	1.68×10^{1}	1.26×10^{4}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2018	2163	3.22	8.38×10^{-2}	2.34×10^{3}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2167	(a)	(a)	4.24×10^{2}	(a)	(a)

Table G–79. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation							
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2078	2080	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Waste Treatment Plant replacement 1	2138	2140	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Waste Treatment Plant replacement 2	2164	2166	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Cesium and Strontium Capsule Processing Facility	2164	2164	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2056	2056	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 2	2086	2086	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 3	2116	2116	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 4	2146	2146	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 5	2167	2167	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2043	2043	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 2	2068	2068	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 3	2093	2093	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 4	2118	2118	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 5	2143	2143	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 6	2168	2168	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}

Table G–79. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure							
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	1.78×10^{1}	8.28×10^{1}	7.01×10^{2}	2.81×10^{-2}	6.76
Postclosure care	2151	2250	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)

Table G–79. Tank Closure Alternative 6A, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*							
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	3.06×10^{1}	1.42×10^{2}	9.68×10^{2}	4.84×10^{-2}	1.16×10^{1}
Preprocessing Facility operations	2042	2162	1.88×10^{-2}	8.75×10^{-2}	4.09×10^{-1}	2.98×10^{-5}	7.14×10^{-3}
Preprocessing Facility deactivation	2163	2163	2.96×10^{-3}	1.37×10^{-2}	6.42×10^{-2}	4.68×10^{-6}	1.12×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–80. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	6.33×10^{-2}	8.51×10^{-3}	3.57×10^{-4}	1.08×10^{-2}	(a)	8.51×10^{-3}	8.51×10^{-3}
Cesium and Strontium Capsule Processing Facility	2158	2161	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	4.71×10^{-2}	6.34×10^{-3}	2.66×10^{-4}	8.02×10^{-3}	(a)	6.34×10^{-3}	6.34×10^{-3}
Waste Treatment Plant replacement 2	2127	2138	4.71×10^{-2}	6.34×10^{-3}	2.66×10^{-4}	8.02×10^{-3}	(a)	6.34×10^{-3}	6.34×10^{-3}
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, additional	2074	2160	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–80. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction *(continued)*									
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Effluent Treatment Facility replacement 2	2053	2055	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 3	2083	2085	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 4	2113	2115	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 5	2143	2145	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Evaporator replacement 2	2040	2042	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 3	2065	2067	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 4	2090	2092	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 5	2115	2117	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 6	2140	2142	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
IHLW Interim Storage Facility	2018	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	2.17×10^{-1}	7.11×10^{-1}	1.23×10^{-3}	3.70×10^{-2}	(a)	3.12×10^{-1}	2.17×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	2.17×10^{-1}	7.11×10^{-1}	1.23×10^{-3}	3.70×10^{-2}	(a)	3.12×10^{-1}	2.17×10^{-1}
Cesium and Strontium Capsule Processing Facility	2162	2163	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–80. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations *(continued)*									
HLW Debris Storage Facilities	2042	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2018	2163	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2078	2080	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Waste Treatment Plant replacement 1	2138	2140	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Waste Treatment Plant replacement 2	2164	2166	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Cesium and Strontium Capsule Processing Facility	2164	2164	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 1	2056	2056	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 2	2086	2086	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 3	2116	2116	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 4	2146	2146	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 5	2167	2167	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2043	2043	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 2	2068	2068	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 3	2093	2093	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 4	2118	2118	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 5	2143	2143	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 6	2168	2168	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}

Table G–80. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure									
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	1.30×10^{-1}	3.25×10^{-1}	1.36×10^{-2}	4.12×10^{-1}	(a)	1.43×10^{-1}	9.94×10^{-2}
Postclosure care	2151	2250	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–80. Tank Closure Alternative 6A, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year): Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*									
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	2.24×10^{-1}	1.17×10^{-1}	4.90×10^{-3}	1.48×10^{-1}	(a)	5.12×10^{-2}	3.57×10^{-2}
Preprocessing Facility operations	2042	2162	1.38×10^{-4}	1.34×10^{-5}	5.63×10^{-7}	1.70×10^{-5}	(a)	5.89×10^{-6}	4.11×10^{-6}
Preprocessing Facility deactivation	2163	2163	2.16×10^{-5}	2.11×10^{-6}	8.85×10^{-8}	2.67×10^{-6}	(a)	9.26×10^{-7}	6.45×10^{-7}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–81. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	8.67	4.02×10^{1}	1.08×10^{2}	1.37×10^{-2}	3.29
Cesium and Strontium Capsule Processing Facility	2158	2161	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	3.29
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	6.46	3.00×10^{1}	8.32×10^{1}	1.02×10^{-2}	2.45
Waste Treatment Plant replacement 2	2127	2138	6.46	3.00×10^{1}	8.32×10^{1}	1.02×10^{-2}	2.45
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, additional	2074	2160	(a)	(a)	(a)	(a)	(a)

Table G–81. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction *(continued)*							
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Effluent Treatment Facility replacement 2	2053	2055	1.24×10^{1}	1.33×10^{1}	6.77×10^{2}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 3	2083	2085	1.24×10^{1}	1.33×10^{1}	6.77×10^{2}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 4	2113	2115	1.24×10^{1}	1.33×10^{1}	6.77×10^{2}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 5	2143	2145	1.24×10^{1}	1.33×10^{1}	6.77×10^{2}	1.73×10^{-2}	1.53
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Evaporator replacement 2	2040	2042	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 3	2065	2067	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 4	2090	2092	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 5	2115	2117	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Evaporator replacement 6	2140	2142	3.61	2.94	6.98×10^{2}	4.98×10^{-3}	3.78×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)
Operations							
IHLW Interim Storage Facility	2018	2163	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2162	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	2.98×10^{1}	1.38×10^{2}	5.83×10^{2}	4.70×10^{-2}	1.13×10^{1}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	2.98×10^{1}	1.38×10^{2}	5.83×10^{2}	4.70×10^{-2}	1.13×10^{1}
Cesium and Strontium Capsule Processing Facility	2162	2163	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2042	2153	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	6.46×10^{2}	1.68×10^{1}	1.26×10^{4}	8.66×10^{-1}	3.12×10^{1}

Table G–81. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations *(continued)*							
Evaporator	2018	2163	3.22	8.38×10^{-2}	5.14×10^{-3}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2167	(a)	(a)	4.24×10^{2}	(a)	(a)
Deactivation							
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2079	2081	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Waste Treatment Plant replacement 1	2139	2141	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Waste Treatment Plant replacement 2	2164	2166	6.92×10^{-1}	3.21	1.36×10^{1}	1.09×10^{-3}	2.62×10^{-1}
Cesium and Strontium Capsule Processing Facility	2164	2164	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2056	2056	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 2	2086	2086	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 3	2116	2116	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 4	2146	2146	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 5	2167	2167	3.23×10^{2}	8.40	8.66	4.33×10^{-1}	1.56×10^{1}
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2043	2043	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 2	2068	2068	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 3	2093	2093	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 4	2118	2118	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 5	2143	2143	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 6	2168	2168	7.89×10^{-1}	2.05×10^{-2}	1.92×10^{1}	1.06×10^{-3}	3.81×10^{-2}

Table G–81. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure							
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)

Table G–81. Tank Closure Alternative 6A, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*							
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)
B Area cribs and trenches (ditches) removal	2054	2084	(a)	(a)	(a)	(a)	(a)
T Area cribs and trenches (ditches) removal	2100	2145	(a)	(a)	(a)	(a)	(a)
B & T Area cribs and trenches (ditches) construction 1	2050	2053	(a)	(a)	(a)	(a)	(a)
B & T Area cribs and trenches (ditches) construction 2	2096	2099	(a)	(a)	(a)	(a)	(a)
B & T Area cribs and trenches (ditches) deactivation 1	2085	2087	(a)	(a)	(a)	(a)	(a)
B & T Area cribs and trenches (ditches) deactivation 2	2146	2148	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	2.68×10^{3}	1.25×10^{4}	5.88×10^{4}	4.24	1.02×10^{3}
Preprocessing Facility operations	2042	2162	3.50×10^{-1}	1.62	7.58	5.52×10^{-4}	1.33×10^{-1}
Preprocessing Facility deactivation	2163	2163	5.50×10^{-2}	2.55×10^{-1}	1.19	8.68×10^{-5}	2.08×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–82. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toulene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	6.33×10^{-2}	8.51×10^{-3}	3.57×10^{-4}	1.08×10^{-2}	(a)	8.51×10^{-3}	8.51×10^{-3}
Cesium and Strontium Capsule Processing Facility	2158	2161	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	4.71×10^{-2}	6.34×10^{-3}	2.66×10^{-4}	8.02×10^{-3}	(a)	6.34×10^{-3}	6.34×10^{-3}
Waste Treatment Plant replacement 2	2127	2138	4.71×10^{-2}	6.34×10^{-3}	2.66×10^{-4}	8.02×10^{-3}	(a)	6.34×10^{-3}	6.34×10^{-3}
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, additional	2074	2160	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–82. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toulene	Xylene
Construction *(continued)*									
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Effluent Treatment Facility replacement 2	2053	2055	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 3	2083	2085	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 4	2113	2115	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Effluent Treatment Facility replacement 5	2143	2145	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.91×10^{-3}	(a)	2.02×10^{-2}	6.19×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Evaporator replacement 2	2040	2042	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 3	2065	2067	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 4	2090	2092	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 5	2115	2117	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Evaporator replacement 6	2140	2142	4.74×10^{-3}	9.91×10^{-4}	7.95×10^{-4}	8.96×10^{-4}	(a)	6.18×10^{-3}	1.85×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
IHLW Interim Storage Facility	2018	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	2.17×10^{-1}	7.11×10^{-1}	1.23×10^{-3}	3.70×10^{-2}	(a)	3.12×10^{-1}	2.17×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	2.17×10^{-1}	7.11×10^{-1}	1.23×10^{-3}	3.70×10^{-2}	(a)	3.12×10^{-1}	2.17×10^{-1}
Cesium and Strontium Capsule Processing Facility	2162	2163	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–82. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toulene	Xylene
Operations *(continued)*									
HLW Debris Storage Facilities	2042	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2166	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2018	2163	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2079	2081	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Waste Treatment Plant replacement 1	2139	2141	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Waste Treatment Plant replacement 2	2164	2166	5.05×10^{-3}	1.65×10^{-2}	2.85×10^{-5}	8.60×10^{-4}	(a)	7.25×10^{-3}	5.05×10^{-3}
Cesium and Strontium Capsule Processing Facility	2164	2164	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 1	2056	2056	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 2	2086	2086	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 3	2116	2116	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 4	2146	2146	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 5	2167	2167	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2043	2043	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 2	2068	2068	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 3	2093	2093	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 4	2118	2118	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 5	2143	2143	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 6	2168	2168	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}

Table G–82. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toulene	Xylene
Closure									
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–82. Tank Closure Alternative 6A, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toulene	Xylene
Closure *(continued)*									
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B Area cribs and trenches (ditches) removal	2054	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T Area cribs and trenches (ditches) removal	2100	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) construction 1	2050	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) construction 2	2096	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 1	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 2	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	1.96×10^{1}	2.34×10^{-1}	9.83×10^{-3}	2.97×10^{-1}	(a)	1.03×10^{-1}	7.16×10^{-2}
Preprocessing Facility operations	2042	2162	2.55×10^{-3}	4.72×10^{-5}	1.98×10^{-6}	5.97×10^{-5}	(a)	2.07×10^{-5}	1.44×10^{-5}
Preprocessing Facility deactivation	2163	2163	4.01×10^{-4}	7.42×10^{-6}	3.11×10^{-7}	9.39×10^{-6}	(a)	3.25×10^{-6}	2.27×10^{-6}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–83. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Low-Activity Waste Vitrification Facility	2008	2017	1.54	7.16	5.43×10^{1}	2.43×10^{-3}	5.84×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Effluent Treatment Facility replacement 2	2053	2055	1.24×10^{1}	1.33×10^{1}	9.46×10^{2}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 3	2083	2085	1.24×10^{1}	1.33×10^{1}	9.46×10^{2}	1.73×10^{-2}	1.53
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	5.50	2.55×10^{1}	1.37×10^{2}	8.42×10^{-3}	2.09
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–83. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Waste Treatment Plant, cesium and strontium capsules	2040	2040	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	6.46×10^{2}	1.68×10^{1}	3.25×10^{3}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2043	3.22	8.38×10^{-2}	1.59×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2102	(a)	(a)	4.24×10^{2}	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(a)	(a)
Deactivation							
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	2.34	1.08×10^{1}	5.07×10^{1}	3.69×10^{-3}	8.86×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2056	2056	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 2	2086	2086	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}

Table G–83. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation *(continued)*							
Effluent Treatment Facility replacement 3	2101	2101	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement	2044	2044	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Closure							
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2019	2022	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2046	2049	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2046	2049	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2073	2076	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2073	2076	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2043	2045	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2070	2072	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2062	2064	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2089	2091	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2097	2099	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2097	2099	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	1.78×10^{1}	8.28×10^{1}	7.01×10^{2}	2.81×10^{-2}	6.76
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)

Table G–83. Tank Closure Alternative 6B, Base Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*							
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	3.06×10^{1}	1.42×10^{2}	9.68×10^{2}	4.84×10^{-2}	1.16×10^{1}
Preprocessing Facility operations	2023	2099	2.96×10^{-2}	1.37×10^{-1}	6.42×10^{-1}	4.68×10^{-5}	1.12×10^{-2}
Preprocessing Facility deactivation	2100	2100	2.96×10^{-3}	1.37×10^{-2}	6.42×10^{-2}	4.68×10^{-6}	1.12×10^{-3}
Postclosure care	2102	2201	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–84. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Low-Activity Waste Vitrification Facility	2008	2017	1.13×10^{-2}	1.51×10^{-3}	6.35×10^{-5}	1.92×10^{-3}	(a)	6.64×10^{-4}	4.63×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Effluent Treatment Facility replacement 2	2053	2055	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.92×10^{-3}	(a)	2.02×10^{-2}	6.20×10^{-3}
Effluent Treatment Facility replacement 3	2083	2085	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.92×10^{-3}	(a)	2.02×10^{-2}	6.20×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	4.01×10^{-2}	5.40×10^{-3}	(a)	(a)	(a)	5.40×10^{-3}	5.40×10^{-3}
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–84. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2043	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2067	2067	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	1.71×10^{-2}	2.30×10^{-3}	9.62×10^{-5}	2.90×10^{-3}	(a)	1.01×10^{-3}	7.01×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 1	2056	2056	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 2	2086	2086	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}

Table G–84. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation *(continued)*									
Effluent Treatment Facility replacement 3	2101	2101	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2044	2044	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Closure									
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2089	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	1.30×10^{-1}	3.25×10^{-1}	1.36×10^{-2}	4.12×10^{-1}	(a)	1.43×10^{-1}	9.94×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–84. Tank Closure Alternative 6B, Base Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*									
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	2.24×10^{-1}	1.17×10^{-1}	4.90×10^{-3}	1.48×10^{-1}	(a)	5.12×10^{-2}	3.57×10^{-2}
Preprocessing Facility operations	2023	2099	2.16×10^{-4}	2.11×10^{-5}	8.85×10^{-7}	2.67×10^{-5}	(a)	9.26×10^{-6}	6.45×10^{-6}
Preprocessing Facility deactivation	2100	2100	2.16×10^{-5}	2.11×10^{-6}	8.85×10^{-8}	2.67×10^{-6}	(a)	9.26×10^{-7}	6.45×10^{-7}
Postclosure care	2102	2201	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–85. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Low-Activity Waste Vitrification Facility	2008	2017	1.54	7.16	5.43×10^{1}	2.43×10^{-3}	5.84×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Effluent Treatment Facility replacement 2	2053	2055	1.24×10^{1}	1.33×10^{1}	9.46×10^{2}	1.73×10^{-2}	1.53
Effluent Treatment Facility replacement 3	2083	2085	1.24×10^{1}	1.33×10^{1}	9.46×10^{2}	1.73×10^{-2}	1.53
Evaporator replacement 1	2015	2017	3.62	2.96	1.41×10^{2}	5.00×10^{-3}	3.80×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	5.50	2.55×10^{1}	1.37×10^{2}	8.42×10^{-3}	2.09
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)

Table G–85. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Waste Treatment Plant, cesium and strontium capsules	2040	2040	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	6.46×10^{2}	1.68×10^{1}	3.25×10^{3}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2043	3.22	8.38×10^{-2}	1.59×10^{2}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2102	(a)	(a)	4.24×10^{2}	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(a)	(a)
Deactivation							
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	2.34	1.08×10^{1}	5.07×10^{1}	3.69×10^{-3}	8.86×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2056	2056	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 2	2086	2086	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 3	2101	2101	3.23×10^{2}	8.40	5.97	4.33×10^{-1}	1.56×10^{1}
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement	2044	2044	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}

Table G–85. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure							
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2046	2049	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2073	2076	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2070	2072	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2062	2064	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2089	2091	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2097	2099	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)
B Area cribs and trenches (ditches) removal	2035	2061	(a)	(a)	(a)	(a)	(a)
T Area cribs and trenches (ditches) removal	2062	2096	(a)	(a)	(a)	(a)	(a)

Table G–85. Tank Closure Alternative 6B, Option Case, Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure *(continued)*							
Containment structure construction 1	2029	2032	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2056	2059	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2097	2099	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	2.68×10^{3}	1.25×10^{4}	5.88×10^{4}	4.24	1.02×10^{3}
Preprocessing Facility operations	2023	2099	5.50×10^{-1}	2.55	1.19×10^{1}	8.68×10^{-4}	2.08×10^{-1}
Preprocessing Facility deactivation	2100	2100	5.50×10^{-2}	2.55×10^{-1}	1.19	8.68×10^{-5}	2.08×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–86. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Low-Activity Waste Vitrification Facility	2008	2017	1.13×10^{-2}	1.51×10^{-3}	6.35×10^{-5}	1.92×10^{-3}	(a)	6.64×10^{-4}	4.63×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Effluent Treatment Facility replacement 2	2053	2055	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.92×10^{-3}	(a)	2.02×10^{-2}	6.20×10^{-3}
Effluent Treatment Facility replacement 3	2083	2085	2.13×10^{-2}	4.00×10^{-3}	1.23×10^{-4}	3.92×10^{-3}	(a)	2.02×10^{-2}	6.20×10^{-3}
Evaporator replacement 1	2015	2017	4.76×10^{-3}	9.96×10^{-4}	7.95×10^{-4}	9.01×10^{-4}	(a)	6.20×10^{-3}	1.86×10^{-3}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	4.01×10^{-2}	5.40×10^{-3}	(a)	(a)	(a)	5.40×10^{-3}	5.40×10^{-3}
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–86. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2043	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	1.71×10^{-2}	2.30×10^{-3}	9.62×10^{-5}	2.90×10^{-3}	(a)	1.01×10^{-3}	7.01×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 1	2056	2056	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 2	2086	2086	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
Effluent Treatment Facility replacement 3	2101	2101	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.39×10^{-1}	1.80×10^{-1}
IHLW Interim Storage Facility	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2044	2044	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}

Table G–86. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure									
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2089	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B Area cribs and trenches (ditches) removal	2035	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–86. Tank Closure Alternative 6B, Option Case, Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Closure *(continued)*									
T Area cribs and trenches (ditches) removal	2062	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 1	2029	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2056	2059	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	1.96×10^{1}	2.34×10^{-1}	9.83×10^{-3}	2.97×10^{-1}	(a)	1.03×10^{-1}	7.16×10^{-2}
Preprocessing Facility operations	2023	2099	4.01×10^{-3}	7.42×10^{-5}	3.11×10^{-6}	9.39×10^{-5}	(a)	3.25×10^{-5}	2.27×10^{-5}
Preprocessing Facility deactivation	2100	2100	4.01×10^{-4}	7.42×10^{-6}	3.11×10^{-7}	9.39×10^{-6}	(a)	3.25×10^{-6}	2.27×10^{-6}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–87. Tank Closure Alternative 6C Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.08×10^{1}	5.03×10^{1}	4.13×10^{2}	1.71×10^{-2}	4.10
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility	2008	2017	1.54	7.16	5.43×10^{1}	2.43×10^{-3}	5.84×10^{-1}
Cesium and Strontium Capsule Processing Facility	2035	2038	3.13	1.28×10^{1}	4.24×10^{2}	4.85×10^{-3}	1.06
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	1.25×10^{1}	1.34×10^{1}	4.75×10^{2}	1.74×10^{-2}	1.54
Evaporator replacement 1	2015	2017	1.16	2.19	1.41×10^{2}	1.67×10^{-3}	2.11×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	5.50	2.55×10^{1}	1.37×10^{2}	8.42×10^{-3}	2.09

Table G–87. Tank Closure Alternative 6C Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	3.10×10^{1}	1.44×10^{2}	1.32×10^{1}	4.73×10^{-2}	1.17×10^{1}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Waste Treatment Plant, cesium and strontium capsules	2040	2040	2.34×10^{1}	1.08×10^{2}	5.07×10^{2}	3.69×10^{-2}	8.86
Cesium and Strontium Capsule Processing Facility	2039	2040	2.71	1.12×10^{1}	8.61×10^{-1}	4.20×10^{-3}	9.27×10^{-1}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	6.46×10^{2}	1.68×10^{1}	4.03×10^{2}	8.66×10^{-1}	3.12×10^{1}
Evaporator	2006	2043	3.22	8.38×10^{-2}	1.15×10^{-1}	4.32×10^{-3}	1.56×10^{-1}
Borrow Area C	2006	2052	(a)	(a)	4.24×10^{2}	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)
Deactivation							
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	2.34	1.08×10^{1}	5.07×10^{1}	3.69×10^{-3}	8.86×10^{-1}
Cesium and Strontium Capsule Processing Facility	2041	2041	1.31	5.16	3.78×10^{-1}	2.02×10^{-3}	4.31×10^{-1}
Effluent Treatment Facility original	2026	2026	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Effluent Treatment Facility replacement 1	2046	2046	3.23×10^{2}	8.41	1.95	4.33×10^{-1}	1.56×10^{1}
Evaporator original	2018	2018	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Evaporator replacement 1	2044	2044	7.89×10^{-1}	2.05×10^{-2}	2.75	1.06×10^{-3}	3.81×10^{-2}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)

Table G–87. Tank Closure Alternative 6C Criteria Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Closure							
Ancillary equipment grouting	2013	2037	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility construction	2032	2033	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility operations	2034	2043	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	1.70×10^{1}	7.88×10^{1}	6.68×10^{2}	2.68×10^{-2}	6.43
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010a.

Table G–88. Tank Closure Alternative 6C Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	7.91×10^{-2}	1.06×10^{-2}	4.46×10^{-4}	2.24×10^{-2}	(a)	4.66×10^{-3}	3.25×10^{-3}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility	2008	2017	1.13×10^{-2}	1.51×10^{-3}	6.35×10^{-5}	1.92×10^{-3}	(a)	6.64×10^{-4}	4.63×10^{-4}
Cesium and Strontium Capsule Processing Facility	2035	2038	2.01×10^{-2}	2.75×10^{-3}	1.13×10^{-4}	3.43×10^{-3}	(a)	1.94×10^{-3}	1.04×10^{-3}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	2.14×10^{-2}	4.02×10^{-3}	1.23×10^{-4}	3.93×10^{-3}	(a)	2.02×10^{-2}	6.22×10^{-3}
Evaporator replacement 1	2015	2017	3.46×10^{-3}	5.48×10^{-4}	1.81×10^{-4}	6.10×10^{-4}	(a)	1.58×10^{-3}	5.29×10^{-4}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	4.01×10^{-2}	5.40×10^{-3}	(a)	(a)	(a)	5.40×10^{-3}	5.40×10^{-3}
Operations									
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2043	2.26×10^{-1}	3.42×10^{-2}	(a)	(a)	(a)	1.50×10^{-2}	1.04×10^{-2}
Retrieval operations	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2043	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	1.71×10^{-1}	2.30×10^{-2}	9.62×10^{-4}	2.90×10^{-2}	(a)	1.01×10^{-2}	7.01×10^{-3}
Cesium and Strontium Capsule Processing Facility	2039	2040	1.76×10^{-2}	2.40×10^{-3}	9.93×10^{-5}	3.00×10^{-3}	(a)	1.63×10^{-3}	8.90×10^{-4}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–88. Tank Closure Alternative 6C Toxic Pollutant Emissions from Mobile Sources *(continued)*

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations *(continued)*									
HLW Melter Interim Storage Facilities	2018	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	4.99×10^{-2}	8.32×10^{-2}	4.67×10^{-4}	2.80×10^{-2}	(a)	1.28	3.61×10^{-1}
Evaporator	2006	2043	2.49×10^{-4}	4.15×10^{-4}	2.33×10^{-6}	1.40×10^{-4}	(a)	6.38×10^{-3}	1.80×10^{-3}
Borrow Area C	2006	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	1.71×10^{-2}	2.30×10^{-3}	9.62×10^{-5}	2.90×10^{-3}	(a)	1.01×10^{-3}	7.01×10^{-4}
Cesium and Strontium Capsule Processing Facility	2041	2041	8.12×10^{-3}	1.12×10^{-3}	4.59×10^{-5}	1.39×10^{-3}	(a)	8.76×10^{-4}	4.45×10^{-4}
Effluent Treatment Facility original	2026	2026	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Effluent Treatment Facility replacement 1	2046	2046	2.50×10^{-2}	4.16×10^{-2}	2.34×10^{-4}	1.40×10^{-2}	(a)	6.40×10^{-1}	1.81×10^{-1}
Evaporator original	2018	2018	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Evaporator replacement 1	2044	2044	6.10×10^{-5}	1.02×10^{-4}	5.70×10^{-7}	3.42×10^{-5}	(a)	1.56×10^{-3}	4.40×10^{-4}
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Ancillary equipment grouting	2013	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility construction	2032	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility operations	2034	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	1.24×10^{-1}	3.10×10^{-1}	1.30×10^{-2}	3.92×10^{-1}	(a)	1.36×10^{-1}	9.47×10^{-2}
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–89. FFTF Decommissioning Alternative 1 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate from Mobile Sources (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Deactivation							
Administrative controls	2008	2107	(a)	(a)	3.14×10^{-1}	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–90. FFTF Decommissioning Alternative 1 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Deactivation									
Administrative controls	2008	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–91. FFTF Decommissioning Alternative 2 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Decommissioning							
Above-grade structure and equipment removal	2013	2020	4.38×10^{-1}	2.03	8.25×10^{2}	6.91×10^{-4}	1.66×10^{-1}
Backfill of Reactor Containment Building with grout	2017	2017	3.32×10^{-3}	1.54×10^{-2}	1.48×10^{-1}	5.24×10^{-6}	1.26×10^{-3}
Backfill of Buildings 491 East and West with grout	2017	2017	(a)	(a)	(a)	(a)	(a)
Grout facility construction	2016	2016	(a)	(a)	(a)	(a)	(a)
Grout facility operations	2017	2017	(a)	(a)	2.18×10^{1}	(a)	(a)
Grout facility deactivation	2018	2018	(a)	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	(a)	(a)	6.88×10^{-2}	(a)	(a)
Construction							
Hanford Site Sodium Reaction Facility	2015	2016	(a)	(a)	3.24	(a)	(a)
Hanford Site Remote Treatment Project	2015	2016	4.45×10^{1}	3.20	8.28×10^{1}	5.97×10^{-2}	2.30
Idaho National Laboratory Sodium Processing Facility	2014	2014	(a)	(a)	6.23×10^{-1}	(a)	(a)
Operations							
Hanford Site sodium preparation	2017	2017	3.44	6.96×10^{-1}	2.00×10^{-1}	4.65×10^{-3}	2.10×10^{-1}
Hanford Site Sodium Reaction Facility	2017	2018	1.71×10^{-2}	7.96×10^{-2}	3.19×10^{-2}	2.71×10^{-5}	6.50×10^{-3}
Hanford Site Remote Treatment Project	2017	2017	2.05×10^{-3}	9.53×10^{-3}	6.92×10^{-2}	3.25×10^{-6}	7.78×10^{-4}
Idaho National Laboratory sodium production	2015	2015	3.45	6.96×10^{-1}	2.00×10^{-1}	4.64×10^{-3}	2.10×10^{-1}
Idaho National Laboratory Sodium Processing Facility	2015	2016	7.66×10^{-1}	3.56	1.03×10^{1}	1.21×10^{-3}	2.9×10^{-1}
Idaho National Laboratory Remote Treatment Project	2017	2017	5.45×10^{-2}	2.53×10^{-1}	1.83	8.60×10^{-5}	2.07×10^{-2}
Deactivation							
Hanford Site Sodium Reaction Facility	2019	2019	(a)	(a)	(a)	(a)	(a)
Hanford Site Remote Treatment Project	2018	2018	1.03×10^{-3}	4.76×10^{-3}	3.46×10^{-2}	1.62×10^{-6}	3.89×10^{-4}
Idaho National Laboratory Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)
Idaho National Laboratory Remote Treatment Project	2018	2018	1.02×10^{-3}	4.76×10^{-3}	3.46×10^{-2}	1.62×10^{-6}	3.89×10^{-4}
Closure							
Site regrading	2021	2021	(a)	(a)	1.45×10^{2}	(a)	(a)
Site revegetation	2021	2021	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	(a)	(a)	1.84×10^{1}	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–92. FFTF Decommissioning Alternative 2 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Decommissioning									
Above-grade structure and equipment removal	2013	2020	3.19×10^{-3}	4.30×10^{-4}	1.80×10^{-5}	5.44×10^{-4}	(a)	1.88×10^{-4}	1.31×10^{-4}
Backfill of Reactor Containment Building with grout	2017	2017	2.42×10^{-5}	3.26×10^{-6}	1.37×10^{-7}	4.12×10^{-6}	(a)	1.43×10^{-6}	9.95×10^{-7}
Backfill of Buildings 491 East and West with grout	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility construction	2016	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility operations	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility deactivation	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Construction									
Hanford Site Sodium Reaction Facility	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Hanford Site Remote Treatment Project	2015	2016	6.62×10^{-3}	6.12×10^{-3}	4.99×10^{-5}	2.45×10^{-3}	(a)	1.32×10^{-3}	2.47×10^{-2}
Idaho National Laboratory Sodium Processing Facility	2014	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Hanford Site sodium preparation	2017	2017	1.21×10^{-3}	5.55×10^{-4}	3.07×10^{-4}	7.80×10^{-6}	(a)	6.61×10^{-3}	1.89×10^{-3}
Hanford Site Sodium Reaction Facility	2017	2018	1.81×10^{-5}	1.68×10^{-5}	7.06×10^{-7}	2.13×10^{-5}	(a)	7.38×10^{-6}	5.14×10^{-6}
Hanford Site Remote Treatment Project	2017	2017	1.50×10^{-5}	2.01×10^{-6}	1.50×10^{-4}	6.89×10^{-3}	(a)	8.85×10^{-7}	6.16×10^{-7}
Idaho National Laboratory sodium production	2015	2015	1.21×10^{-3}	5.55×10^{-4}	3.07×10^{-4}	7.80×10^{-6}	(a)	6.60×10^{-3}	1.89×10^{-3}
Idaho National Laboratory Sodium Processing Facility	2015	2016	(a)	7.52×10^{-4}	3.16×10^{-5}	9.52×10^{-4}	(a)	3.30×10^{-4}	2.29×10^{-4}
Idaho National Laboratory Remote Treatment Project	2017	2017	3.97×10^{-4}	5.35×10^{-5}	1.25×10^{-6}	3.77×10^{-5}	(a)	2.35×10^{-5}	1.63×10^{-5}
Deactivation									
Hanford Site Sodium Reaction Facility	2019	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Hanford Site Remote Treatment Project	2018	2018	7.48×10^{-6}	1.01×10^{-6}	3.74×10^{-8}	1.13×10^{-6}	(a)	4.42×10^{-7}	3.08×10^{-7}
Idaho National Laboratory Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Idaho National Laboratory Remote Treatment Project	2018	2018	7.48×10^{-6}	1.01×10^{-6}	3.74×10^{-8}	1.12×10^{-6}	(a)	4.42×10^{-7}	3.08×10^{-7}
Closure									
Site regrading	2021	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Site revegetation	2021	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–93. FFTF Decommissioning Alternative 3 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Decommissioning							
Above-grade structure and equipment removal	2013	2020	4.38×10^{-1}	2.03	8.25×10^{2}	6.91×10^{-4}	1.66×10^{-1}
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	1.35×10^{-2}	6.28×10^{-2}	4.84×10^{-1}	2.14×10^{-5}	5.13×10^{-3}
Grout facility construction	2012	2012	(a)	(a)	(a)	(a)	(a)
Grout facility operations	2013	2014	(a)	(a)	2.18×10^{1}	(a)	(a)
Grout facility deactivation	2015	2015	(a)	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	(a)	(a)	6.88×10^{-2}	(a)	(a)
Construction							
Hanford Site Sodium Reaction Facility	2015	2016	(a)	(a)	3.24	(a)	(a)
Hanford Site Remote Treatment Project	2015	2016	4.45×10^{1}	3.20	8.28×10^{1}	5.97×10^{-2}	2.30
Idaho National Laboratory Sodium Processing Facility	2014	2014	(a)	(a)	6.23×10^{-1}	(a)	(a)
Operations							
Hanford Site sodium preparation	2017	2017	3.44	6.96×10^{-1}	2.00×10^{-1}	4.65×10^{-3}	2.10×10^{-1}
Hanford Site Sodium Reaction Facility	2017	2018	1.71×10^{-2}	7.96×10^{-2}	3.19×10^{-2}	2.71×10^{-5}	6.50×10^{-3}
Hanford Site Remote Treatment Project	2017	2017	2.05×10^{-3}	9.53×10^{-3}	6.92×10^{-2}	3.25×10^{-6}	7.78×10^{-4}
Idaho National Laboratory sodium preparation	2015	2015	3.45	6.96×10^{-1}	2.00×10^{-1}	4.64×10^{-3}	2.10×10^{-1}
Idaho National Laboratory Sodium Processing Facility	2015	2016	7.66×10^{-1}	3.56	1.03×10^{1}	1.21×10^{-3}	2.90×10^{-1}
Idaho National Laboratory Remote Treatment Project	2017	2017	5.45×10^{-2}	2.53×10^{-1}	1.83	8.60×10^{-5}	2.07×10^{-2}
Deactivation							
Hanford Site Sodium Reaction Facility	2019	2019	1.03×10^{-3}	4.76×10^{-3}	3.46×10^{-2}	1.62×10^{-6}	(a)
Hanford Site Remote Treatment Project	2018	2018	(a)	(a)	2.18×10^{2}	(a)	3.89×10^{-4}
Idaho National Laboratory Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)
Idaho National Laboratory Remote Treatment Project	2018	2018	1.02×10^{-3}	4.76×10^{-3}	3.46×10^{-2}	1.62×10^{-6}	3.89×10^{-4}
Closure							
Site regrading	2018	2018	(a)	(a)	2.18×10^{2}	(a)	(a)
Site revegetation	2018	2018	(a)	(a)	(a)	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010b.

Table G–94. FFTF Decommissioning Alternative 3 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Decommissioning									
Above-grade structure and equipment removal	2013	2020	3.19×10^{-3}	4.30×10^{-4}	1.80×10^{-5}	5.44×10^{-4}	(a)	1.88×10^{-4}	1.31×10^{-4}
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	9.88×10^{-5}	1.33×10^{-5}	5.57×10^{-7}	1.68×10^{-5}	(a)	5.82×10^{-6}	4.06×10^{-6}
Grout facility construction	2012	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility operations	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility deactivation	2015	2015	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Construction									
Hanford Site Sodium Reaction Facility	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Hanford Site Remote Treatment Project	2015	2016	6.62×10^{-3}	6.12×10^{-3}	4.99×10^{-5}	2.45×10^{-3}	(a)	1.32×10^{-3}	2.47×10^{-2}
Idaho National Laboratory Sodium Processing Facility	2014	2014	2.32×10^{-3}	1.33×10^{-3}	1.56×10^{-5}	6.55×10^{-4}	(a)	1.71×10^{-2}	4.87×10^{-3}
Operations									
Hanford Site sodium preparation	2017	2017	1.21×10^{-3}	5.55×10^{-4}	3.07×10^{-4}	7.80×10^{-6}	(a)	6.61×10^{-3}	1.89×10^{-3}
Hanford Site Sodium Reaction Facility	2017	2018	1.81×10^{-5}	1.68×10^{-5}	7.06×10^{-7}	2.13×10^{-5}	(a)	7.38×10^{-6}	5.14×10^{-6}
Hanford Site Remote Treatment Project	2017	2017	1.50×10^{-5}	2.01×10^{-6}	1.50×10^{-4}	6.89×10^{-3}	(a)	8.85×10^{-7}	6.16×10^{-7}
Idaho National Laboratory sodium preparation	2015	2015	1.21×10^{-3}	5.55×10^{-4}	3.07×10^{-4}	7.80×10^{-6}	(a)	6.61×10^{-3}	1.89×10^{-3}
Idaho National Laboratory Sodium Processing Facility	2015	2016	(a)	7.52×10^{-4}	3.15×10^{-5}	9.51×10^{-4}	(a)	3.30×10^{-4}	2.30×10^{-4}
Idaho National Laboratory Remote Treatment Project	2017	2017	3.97×10^{-4}	5.35×10^{-5}	1.25×10^{-6}	3.78×10^{-5}	(a)	2.35×10^{-5}	1.63×10^{-5}
Deactivation									
Hanford Site Sodium Reaction Facility	2019	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Hanford Site Remote Treatment Project	2018	2018	7.48×10^{-6}	1.01×10^{-6}	3.74×10^{-8}	1.13×10^{-6}	(a)	4.42×10^{-7}	3.08×10^{-7}
Idaho National Laboratory Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Idaho National Laboratory Remote Treatment Project	2018	2018	7.48×10^{-6}	1.01×10^{-6}	3.74×10^{-8}	1.13×10^{-6}	(a)	4.42×10^{-7}	3.08×10^{-7}
Closure									
Site regrading	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Site revegetation	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–95. Waste Management Alternative 1 Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Operations							
Low-level radioactive waste burial grounds	2007	2035	(a)	(a)	2.61	(a)	(a)
Deactivation							
Integrated Disposal Facility	2009	2009	(a)	(a)	2.92×10^{2}	(a)	(a)
Postclosure care	2036	2135	1.27×10^{1}	4.89	6.13×10^{-1}	1.72×10^{-2}	9.40×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–96. Waste Management Alternative 1 Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Operations									
Low-level radioactive waste burial grounds	2007	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation									
Integrated Disposal Facility	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2036	2135	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–97. Waste Management Alternative 2 (Treatment and Storage) Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	**Nitrogen Dioxide**	**PM_{10}**	**Sulfur Dioxide**	**VOCs**
Construction							
T Plant complex expansion	2011	2012	1.84	6.15	3.80×10^{1}	2.79×10^{-3}	5.26×10^{-1}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	8.89	1.47×10^{1}	4.28×10^{2}	1.27×10^{-2}	1.47
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	4.23	3.53	7.67×10^{2}	5.84×10^{-3}	4.49×10^{-1}
Central Waste Complex expansion	2011	2012	2.98	4.94	1.44×10^{2}	4.25×10^{-3}	4.92×10^{-1}
Operations							
T Plant complex expansion	2013	2050	9.93×10^{3}	2.58×10^{2}	1.36×10^{4}	1.33×10^{1}	4.80×10^{2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	7.69	2.00×10^{-1}	1.10×10^{4}	1.03×10^{-2}	3.72×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	3.14	8.16×10^{-2}	3.12×10^{3}	4.20×10^{-3}	1.52×10^{-1}
Central Waste Complex expansion	2013	2050	3.19	8.28×10^{-2}	5.11×10^{2}	4.27×10^{-3}	1.54×10^{-1}
Deactivation							
T Plant complex expansion	2051	2051	7.48	9.89	6.64	1.05×10^{-2}	1.06
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	4.71	1.22×10^{-1}	2.32	6.31×10^{-3}	2.28×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	1.88	4.90×10^{-2}	2.32	2.52×10^{-3}	9.10×10^{-2}
Central Waste Complex expansion	2051	2051	1.59	4.13×10^{-2}	1.69	2.13×10^{-3}	7.67×10^{-2}

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; WRAP=Waste Receiving and Processing Facility.
Source: SAIC 2010c.

Table G–98. Waste Management Alternative 2 (Treatment and Storage) Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
T Plant complex expansion	2011	2012	9.69×10^{-3}	1.37×10^{-3}	5.48×10^{-5}	1.66×10^{-3}	(a)	1.60×10^{-3}	6.88×10^{-4}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	2.33×10^{-2}	3.82×10^{-3}	1.33×10^{-4}	4.14×10^{-3}	(a)	1.27×10^{-2}	4.15×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	5.68×10^{-3}	1.18×10^{-3}	5.57×10^{-3}	6.43×10^{-3}	(a)	7.21×10^{-3}	2.17×10^{-3}
Central Waste Complex expansion	2011	2012	7.84×10^{-3}	1.28×10^{-3}	4.47×10^{-5}	1.39×10^{-3}	(a)	4.27×10^{-3}	1.39×10^{-3}
Operations									
T Plant complex expansion	2013	2050	7.28×10^{-1}	1.28	7.17×10^{-3}	4.31×10^{-1}	(a)	1.96×10^{1}	5.54
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	5.95×10^{-4}	9.90×10^{-4}	5.56×10^{-6}	3.34×10^{-4}	(a)	1.52×10^{-2}	4.29×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	2.43×10^{-4}	4.04×10^{-4}	2.27×10^{-6}	1.36×10^{-4}	(a)	6.21×10^{-3}	1.75×10^{-3}
Central Waste Complex expansion	2013	2050	2.46×10^{-4}	4.10×10^{-4}	2.30×10^{-6}	1.38×10^{-4}	(a)	6.30×10^{-3}	1.78×10^{-3}
Deactivation									
T Plant complex expansion	2051	2051	8.26×10^{-4}	2.76×10^{-3}	9.03×10^{-5}	2.84×10^{-3}	(a)	1.16×10^{-2}	3.63×10^{-3}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	3.64×10^{-4}	6.06×10^{-4}	3.40×10^{-6}	2.04×10^{-4}	(a)	9.31×10^{-3}	2.63×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	1.46×10^{-4}	2.42×10^{-4}	1.36×10^{-6}	8.17×10^{-5}	(a)	3.72×10^{-3}	1.05×10^{-3}
Central Waste Complex expansion	2051	2051	1.23×10^{-4}	2.04×10^{-4}	1.15×10^{-6}	6.89×10^{-5}	(a)	3.14×10^{-3}	8.86×10^{-4}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–99. Waste Management Alternative 2, Disposal Group 1, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility	2006	2008	(a)	(a)	2.00×10^{3}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	6.64×10^{2}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility	2009	2050	(a)	(a)	2.69×10^{1}	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	7.05×10^{1}	(a)	(a)
Closure							
Integrated Disposal Facility	2051	2052	(a)	(a)	4.62×10^{2}	(a)	(a)
Postclosure care, Integrated Disposal Facility	2053	2152	(a)	(a)	6.72×10^{-2}	(a)	(a)
River Protection Project Disposal Facility	2051	2052	(a)	(a)	1.52×10^{2}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	1.27×10^{-1}	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–100. Waste Management Alternative 2, Disposal Group 1, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–101. Waste Management Alternative 2, Disposal Group 2, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility	2006	2008	(a)	(a)	7.06×10^{2}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	5.15×10^{3}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility	2009	2100	(a)	(a)	4.34	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	2.00×10^{2}	(a)	(a)
Closure							
Integrated Disposal Facility	2101	2102	(a)	(a)	1.63×10^{2}	(a)	(a)
Postclosure care, Integrated Disposal Facility	2103	2202	(a)	(a)	2.38×10^{-2}	(a)	(a)
River Protection Project Disposal Facility	2101	2102	(a)	(a)	1.18×10^{3}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	1.27×10^{-1}	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–102. Waste Management Alternative 2, Disposal Group 2, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility	2101	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2101	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–103. Waste Management Alternative 2, Disposal Group 3, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility	2006	2008	(a)	(a)	7.06×10^{2}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	5.15×10^{3}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility	2009	2165	(a)	(a)	2.54	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	1.10×10^{2}	(a)	(a)
Closure							
Integrated Disposal Facility	2166	2167	(a)	(a)	1.63×10^{2}	(a)	(a)
Postclosure care, Integrated Disposal Facility	2168	2267	(a)	(a)	2.38×10^{-2}	(a)	(a)
River Protection Project Disposal Facility	2166	2167	(a)	(a)	1.18×10^{3}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	1.27×10^{-1}	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–104. Waste Management Alternative 2, Disposal Group 3, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year) Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility	2166	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2166	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–105. Waste Management Alternative 3 (Treatment and Storage) Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
T Plant complex expansion	2011	2012	1.84	6.15	3.80×10^{1}	2.79×10^{-3}	5.26×10^{-1}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	8.89	1.47×10^{1}	4.28×10^{2}	1.27×10^{-2}	1.47
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	4.23	3.53	7.67×10^{2}	5.84×10^{-3}	4.49×10^{-1}
Central Waste Complex expansion	2011	2012	2.98	4.94	1.44×10^{2}	4.25×10^{-3}	4.92×10^{-1}
Operations							
T Plant complex expansion	2013	2050	9.93×10^{3}	2.58×10^{2}	1.36×10^{4}	1.33×10^{1}	4.80×10^{2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	7.69	2.00×10^{-1}	1.10×10^{4}	1.03×10^{-2}	3.72×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	3.14	8.16×10^{-2}	3.12×10^{3}	4.20×10^{-3}	1.52×10^{-1}
Central Waste Complex expansion	2013	2050	3.19	8.28×10^{-2}	5.11×10^{2}	4.27×10^{-3}	1.54×10^{-1}
Deactivation							
T Plant complex expansion	2051	2051	7.48	9.89	6.64	1.05×10^{-2}	1.06
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	4.71	1.22×10^{-1}	2.32	6.31×10^{-3}	2.28×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	1.88	4.90×10^{-2}	2.32	2.52×10^{-3}	9.10×10^{-2}
Central Waste Complex expansion	2051	2051	1.59	4.13×10^{-2}	1.69	2.13×10^{-3}	7.67×10^{-2}

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; VOC=volatile organic compound; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–106. Waste Management Alternative 3 (Treatment and Storage) Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
T Plant complex expansion	2011	2012	9.69×10^{-3}	1.37×10^{-3}	5.48×10^{-5}	1.66×10^{-3}	(a)	1.60×10^{-3}	6.88×10^{-4}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	2.33×10^{-2}	3.82×10^{-3}	1.33×10^{-4}	4.14×10^{-3}	(a)	1.27×10^{-2}	4.15×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	5.68×10^{-3}	1.18×10^{-3}	5.57×10^{-3}	6.43×10^{-3}	(a)	7.21×10^{-3}	2.17×10^{-3}
Central Waste Complex expansion	2011	2012	7.84×10^{-3}	1.28×10^{-3}	4.47×10^{-5}	1.39×10^{-3}	(a)	4.27×10^{-3}	1.39×10^{-3}
Operations									
T Plant complex expansion	2013	2050	7.28×10^{-1}	1.28	7.17×10^{-3}	4.31×10^{-1}	(a)	1.96×10^{1}	5.54
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	5.95×10^{-4}	9.90×10^{-4}	5.56×10^{-6}	3.34×10^{-4}	(a)	1.52×10^{-2}	4.29×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	2.43×10^{-4}	4.04×10^{-4}	2.27×10^{-6}	1.36×10^{-4}	(a)	6.21×10^{-3}	1.75×10^{-3}
Central Waste Complex expansion	2013	2050	2.46×10^{-4}	4.10×10^{-4}	2.30×10^{-6}	1.38×10^{-4}	(a)	6.30×10^{-3}	1.78×10^{-3}
Deactivation									
T Plant complex expansion	2051	2051	8.26×10^{-4}	2.76×10^{-3}	9.03×10^{-5}	2.84×10^{-3}	(a)	1.16×10^{-2}	3.63×10^{-3}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	3.64×10^{-4}	6.06×10^{-4}	3.40×10^{-6}	2.04×10^{-4}	(a)	9.31×10^{-3}	2.63×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	1.46×10^{-4}	2.42×10^{-4}	1.36×10^{-6}	8.17×10^{-5}	(a)	3.72×10^{-3}	1.05×10^{-3}
Central Waste Complex expansion	2051	2051	1.23×10^{-4}	2.04×10^{-4}	1.15×10^{-6}	6.89×10^{-5}	(a)	3.14×10^{-3}	8.86×10^{-4}

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–107. Waste Management Alternative 3, Disposal Group 1, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	1.25×10^{3}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	1.03×10^{2}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	6.64×10^{2}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2050	(a)	(a)	2.47×10^{1}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	2.03	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	7.05×10^{1}	(a)	(a)
Closure							
Integrated Disposal Facility, 200-East Area	2051	2052	(a)	(a)	3.32×10^{2}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	2.72×10^{1}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	(a)	(a)	9.07×10^{-2}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	7.43×10^{-3}	(a)	(a)
River Protection Project Disposal Facility	2051	2052	(a)	(a)	1.52×10^{2}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	1.53×10^{-1}	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–108. Waste Management Alternative 3, Disposal Group 1, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility, 200-East Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–109. Waste Management Alternative 3, Disposal Group 2, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	3.91×10^{2}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	1.03×10^{2}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	5.15×10^{3}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2100	(a)	(a)	3.52	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	2.03	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	2.00×10^{2}	(a)	(a)
Closure							
Integrated Disposal Facility, 200-East Area	2101	2102	(a)	(a)	1.03×10^{2}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	2.72×10^{1}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	(a)	(a)	2.83×10^{-2}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	7.43×10^{-3}	(a)	(a)
River Protection Project Disposal Facility	2101	2102	(a)	(a)	1.18×10^{3}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	1.18	(a)	(a)

a Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–110. Waste Management Alternative 3, Disposal Group 2, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility, 200-East Area	2101	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2101	2102	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

Table G–111. Waste Management Alternative 3, Disposal Group 3, Criteria Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)				
			Carbon Monoxide	Nitrogen Dioxide	PM_{10}	Sulfur Dioxide	VOCs
Construction							
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	3.91×10^{2}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	1.03×10^{2}	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	5.15×10^{3}	(a)	(a)
Operations							
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	2.61	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2165	(a)	(a)	2.06	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	2.03	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	1.10×10^{2}	(a)	(a)
Closure							
Integrated Disposal Facility, 200-East Area	2166	2167	(a)	(a)	1.03×10^{2}	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	2.72×10^{1}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	(a)	(a)	2.83×10^{-2}	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	7.43×10^{-3}	(a)	(a)
River Protection Project Disposal Facility	2166	2167	(a)	(a)	1.18×10^{3}	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	1.18	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; VOC=volatile organic compound.

Source: SAIC 2010c.

Table G–112. Waste Management Alternative 3, Disposal Group 3, Toxic Pollutant Emissions from Mobile Sources

Facility/System	Start Year	End Year	Emission Rate (metric tons per year)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Integrated Disposal Facility, 200-East Area	2166	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2166	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a] Emissions for this activity and pollutant were not calculated because annual fuel use for this activity and the resulting emissions would be small compared with those of other activities or would be zero.

Source: SAIC 2010c.

G.3 AIR QUALITY IMPACTS UNDER THE ALTERNATIVES

Maximum concentrations of each air pollutant for defined averaging periods were calculated for each alternative. Using the average emissions for an activity, the maximum air pollutant concentrations at a point of public access were determined for the activity for each of the averaging periods. The combined impact for an averaging period was determined by summing the contributions for each pollutant and averaging period for all activities that would be ongoing during a year. The year (or years) with the highest concentration—the peak year—was identified for each pollutant for each averaging period for each alternative. The peak year can therefore differ depending on the pollutant and the averaging period. Presented in Tables G–113 through G–166 is a summary of the contribution of each activity to the peak-year concentrations. Totals may not equal the sum of the contributions due to rounding. The data in these tables correspond to the peak years identified in the summary tables in the air quality sections of Chapter 4. The total concentrations presented are the sums of the highest possible peak-year concentrations that are attributable to the various activities, as modeled at different receptor locations. Therefore, these totals are overestimates of the peak-year concentrations. Included in the text of Chapter 4 is a discussion of the activities that would contribute to exceedances of the ambient standards; potential exceedances are indicated in the tables' total row by bold type. The figures in Chapter 4 show the duration of the various activities and the potential exceedances of PM_{10}.

The results of the air quality modeling indicate possible exceedances of the 24-hour ambient standard for PM_{10} and $PM_{2.5}$ under all Tank Closure and Waste Management alternatives and the annual $PM_{2.5}$ standard under all alternatives except Tank Closure Alternative 1 and Waste Management Alternatives 2 and 3, Disposal Group 1. The primary activities contributing to these exceedances vary by alternative. For tank closure, they include construction of certain major facilities such as the WTP and replacements, waste receiver facilities, modified RCRA Subtitle C barriers, Hanford landfill barriers, double-shell tanks, Contact-Handled Mixed Transuranic Waste Facilities, and Effluent Treatment Facility and replacements, as well as operation of Borrow Area C. Major considerations in estimating construction-related particulate matter emissions include construction equipment types and activity, windblown particulates from disturbed areas, resuspension of road dust, fuel combustion, and concrete batch plant operations. Exceedances of the 24-hour PM_{10} standard under the Tank Closure alternatives could occur over as few as 3 years under Tank Closure Alternative 1 to as many as162 years under Tank Closure Alternative 6A, Base or Option Case. Similar exceedances of $PM_{2.5}$ could occur.

The primary activities contributing to exceedances of the PM_{10} and $PM_{2.5}$ 24-hour ambient standards under the Waste Management alternatives would include (1) construction and closure of major facilities such as the Integrated Disposal Facility and the River Protection Project Disposal Facility; (2) operation of the Central Waste Complex, Remote-Handled Mixed Transuranic/Transuranic waste facility (Waste Receiving and Processing Facility expansion), Contact-Handled Mixed Transuranic/Transuranic waste facility (Waste Receiving and Processing Facility expansion), Integrated Disposal Facility, and Central Waste Complex expansion storage facility; and (3) deactivation of the Integrated Disposal Facility. Exceedances of the 24-hour PM_{10} standard could occur over as many as 162 years under Waste Management Alternative 2, Disposal Group 3.

Factored into estimates of particulate matter emissions from general construction activities are fugitive dust emissions from disturbed construction areas, including dust suspended by wind and by equipment and vehicle activity. The emission factor used for these estimates is intended to provide a gross estimate of total suspended particulate emissions, albeit an estimate for which more-detailed engineering of the construction activity would allow for a more refined estimate of dust emissions. For analysis purposes, emissions of PM_{10} and $PM_{2.5}$ from general construction activities were assumed to be the same as total suspended particulate emissions. The resulting estimate of general construction activity emissions, the primary contributor to construction particulate matter emissions, thus entails a substantial overestimate of PM_{10} and $PM_{2.5}$ emissions for the primary construction activities. Further, as discussed in Chapter 4, the analysis did not consider appropriate emission controls that could be applied in the construction areas. A refined analysis of emissions based on more-detailed engineering of the construction activities and application of appropriate control technologies should result in substantially lower major construction–related emissions and ambient concentrations under each alternative.

The results of the air quality modeling also indicate possible exceedances of the 1-hour carbon monoxide standard under Tank Closure Alternatives 2A, 2B, 3A, 3B, 3C, and 5. Exceedances of that standard could occur over as many as 7 years under each of these alternatives. The primary activities contributing to these exceedances would include construction of certain large facilities such as the WTP, Cesium and Strontium Capsule Processing Facility, Sulfate Removal Facility, and modified RCRA Subtitle C barriers. Exceedances of the carbon monoxide standards are also indicated under the various disposal groups under Waste Management Alternatives 2 and 3. These carbon monoxide concentrations would result from combustion of fuel in construction equipment. The results also indicate possible exceedances of the 1-hour nitrogen dioxide standard under all Tank Closure and Waste Management alternatives. Sulfur dioxide standards would not be exceeded, except the 1-hour standard under Waste Management Alternatives 2 and 3, Disposal Groups 2 and 3.

Table G–113. Tank Closure Alternative 1 Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2008	2008	2008	2008	2006–2008	2006–2008	2006–2008	2006–2008	2006–2008	2006–2008
Construction												
Canister Storage Building	2006	2008	4.37×10^{1}	6.76	1.01×10^{1}	6.82×10^{-3}	4.82×10^{-1}	4.84×10^{-3}	3.17×10^{-3}	1.14×10^{-3}	2.14×10^{-4}	2.15×10^{-6}
Other infrastructure upgrades	2006	2008	1.80×10^{1}	2.88	1.31×10^{1}	6.45×10^{-3}	1.27	9.07×10^{-3}	4.12×10^{-3}	1.40×10^{-3}	2.86×10^{-4}	2.04×10^{-6}
Tank upgrades	2006	2008	5.67×10^{3}	9.09×10^{2}	7.16×10^{2}	3.53×10^{-1}	9.09	6.47×10^{-2}	2.24×10^{-1}	7.63×10^{-2}	1.56×10^{-2}	1.11×10^{-4}
Waste Treatment Plant	2006	2008	1.72×10^{4}	2.42×10^{3}	1.40×10^{4}	7.45	5.35×10^{2}	5.00	2.38×10^{1}	7.92	1.36	1.27×10^{-2}
Operations												
Routine operations	2006	2008	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation												
Administrative controls	2008	2107	3.37×10^{2}	5.65×10^{1}	3.82×10^{2}	2.88×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Total			2.33×10^{4}	3.41×10^{3}	$\mathbf{1.52\times10^{4}}$	8.19	$\mathbf{5.46\times10^{2}}$	5.08	2.40×10^{1}	8.00	1.37	1.28×10^{-2}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–114. Tank Closure Alternative 1 Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2008	2006–2008	2006–2008	2006–2008	(a)	2006–2008	2006–2008
Construction									
Canister Storage Building	2006	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2008	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2006	2008	1.29	2.52×10^{-3}	6.98×10^{-5}	2.27×10^{-3}	(b)	1.69	5.06×10^{-1}
Operations									
Routine operations	2006	2008	5.59	(b)	(b)	(b)	(b)	(b)	(b)
Deactivation									
Administrative controls	2008	2107	1.91×10^{1}	(b)	(b)	(b)	(b)	(b)	(b)
Total			2.61×10^{1}	2.52×10^{-3}	6.98×10^{-5}	2.27×10^{-3}	0	1.69	5.06×10^{-1}

a There is no peak year because no emissions were calculated.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Source: SAIC 2010a.

Table G–115. Tank Closure Alternative 2A Maximum Criteria Pollutant Concentrations of Peak Activity Periods

			Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
Facility/System	**Start Year**	**End Year**	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066
Construction												
Underground transfer lines	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2088	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	5.38×10^{2}	8.62×10^{1}	2.07×10^{1}	1.02×10^{-2}	7.96×10^{-1}	5.66×10^{-3}	4.97×10^{-3}	1.69×10^{-3}	3.45×10^{-4}	2.45×10^{-6}
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	3.52×10^{2}	5.65×10^{1}	1.59×10^{2}	7.86×10^{-2}	2.22	1.58×10^{-2}	5.08×10^{-2}	1.73×10^{-2}	3.52×10^{-3}	2.51×10^{-5}
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2065	2066	1.39×10^{1}	1.96	3.13×10^{1}	1.67×10^{-2}	2.22×10^{1}	2.07×10^{-1}	6.46×10^{-3}	2.15×10^{-3}	3.69×10^{-4}	3.45×10^{-6}
Double-shell tank replacement	2013	2054	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2065	2076	3.44×10^{4}	4.85×10^{3}	2.79×10^{4}	1.49×10^{1}	1.07×10^{3}	9.99	4.75×10^{1}	1.58×10^{1}	2.72	2.54×10^{-2}
Underground transfer line replacement	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2040	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2065	2067	3.56×10^{3}	5.50×10^{2}	5.15×10^{2}	3.49×10^{-1}	9.34	9.38×10^{-2}	4.79	1.71	3.23×10^{-1}	3.24×10^{-3}

Table G–115. Tank Closure Alternative 2A Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066
Operations												
IHLW Interim Storage Facility	2018	2093	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2092	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2092	5.72×10^{1}	1.50×10^{1}	6.48×10^{1}	8.22×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2092	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2092	7.66	1.28	8.68	6.55×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2092	1.13×10^{2}	3.47×10^{1}	2.44×10^{2}	1.17	3.65×10^{-1}	1.70×10^{-2}	1.09×10^{1}	6.71	1.12	5.23×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2093	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2092	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	2.28×10^{2}	3.81×10^{1}	1.41×10^{1}	1.07×10^{-2}	7.11×10^{-2}	8.21×10^{-4}	3.62×10^{-3}	1.32×10^{-3}	2.37×10^{-4}	2.74×10^{-6}
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	2.40	3.85×10^{-1}	2.72	1.34×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2192	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2095	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2093	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2102	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	1.14×10^{-1}	1.12×10^{-3}

Table G–115. Tank Closure Alternative 2A Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066	2065–2066
Deactivation												
IHLW Interim Storage Facility	2094	2094	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	3.83×10^{2}	6.14×10^{1}	1.61×10^{1}	7.97×10^{-3}	9.88×10^{-2}	7.03×10^{-4}	4.75×10^{-3}	1.61×10^{-3}	3.29×10^{-4}	2.34×10^{-6}
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	7.68	1.23	6.02×10^{-1}	2.97×10^{-4}	3.79×10^{-3}	2.70×10^{-5}	1.84×10^{-4}	6.25×10^{-5}	1.27×10^{-5}	9.07×10^{-8}
Administrative controls	2094	2193	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2094	2095	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2094	2094	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2096	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2068	2068	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2094	2094	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			$\mathbf{4.49\times10^{4}}$	6.50×10^{3}	$\mathbf{3.65\times10^{4}}$	1.83×10^{1}	$\mathbf{1.99\times10^{3}}$	1.62×10^{1}	7.07×10^{1}	2.69×10^{1}	4.60	8.23×10^{-2}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–116. Tank Closure Alternative 2A Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2094	2065–2067	2065–2067	2065–2067	2078–2079	2065–2067	2065–2067
Construction									
Underground transfer lines	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2088	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2065	2066	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Double-shell tank replacement	2013	2054	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2065	2076	(a)	5.03×10^{-3}	1.40×10^{-4}	4.55×10^{-3}	(a)	3.37	1.01
Underground transfer line replacement	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2040	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2065	2067	(a)	3.63×10^{-4}	4.25×10^{-6}	1.79×10^{-4}	(a)	4.65×10^{-1}	1.32×10^{-1}

Table G–116. Tank Closure Alternative 2A Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2094	Benzene Annual 2065–2067	1,3-Butadiene Annual 2065–2067	Formaldehyde Annual 2065–2067	Mercury 24-hour 2078–2079	Toluene 24-hour 2065–2067	Xylene 24-hour 2065–2067
Operations									
IHLW Interim Storage Facility	2018	2093	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2092	(a)	5.12×10^{-5}	1.85×10^{-8}	5.72×10^{-7}	2.78×10^{-3}	3.09×10^{-5}	1.04×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2093	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2092	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2192	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2095	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(b)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2093	(a)	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2102	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(b)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
IHLW Interim Storage Facility	2094	2094	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2078	2079	(a)	(a)	(a)	(a)	3.12×10^{-3}	(a)	(a)
Modified sluicing retrieval system	2013	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2053	2092	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Administrative controls	2094	2193	1.91×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement	2094	2095	1.95×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2094	2094	2.26×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2096	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2068	2068	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2094	2094	6.44×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)

Table G–116. Tank Closure Alternative 2A Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2094	2065–2067	2065–2067	2065–2067	2078–2079	2065–2067	2065–2067
Closure									
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			1.99×10^{1}	5.88×10^{-3}	1.59×10^{-4}	5.20×10^{-3}	5.90×10^{-3}	4.30	1.29

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–117. Tank Closure Alternative 2B Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2015–2016	2040	2040	2040	2040	2040	2040	2040	2040	2040
Construction												
Canister Storage Building	2006	2016	4.37×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	3.01×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	1.80×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	5.67×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.72×10^{4}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility	2008	2017	1.46×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste receiver facilities	2013	2017	1.87×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	2.99×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	1.66×10^{3}	2.78×10^{2}	6.39×10^{1}	4.82×10^{-2}	2.31	2.67×10^{-2}	1.53×10^{-2}	5.61×10^{-3}	1.00×10^{-3}	1.16×10^{-5}
Mobile retrieval system	2013	2028	1.02×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	1.74×10^{2}	4.91×10^{2}	2.42×10^{-1}	6.85	4.87×10^{-2}	1.56×10^{-1}	5.32×10^{-2}	1.08×10^{-2}	7.72×10^{-5}
HLW Melter Interim Storage Facility 1	2015	2016	1.39×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	3.56×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–117. Tank Closure Alternative 2B Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2015–2016	2040	2040	2040	2040	2040	2040	2040	2040	2040
Operations												
IHLW Interim Storage Facility	2018	2040	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2043	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2043	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2043	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2043	(a)	8.11×10^{1}	5.86×10^{2}	2.80	1.04	4.86×10^{-2}	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	8.11×10^{1}	5.86×10^{2}	2.80	1.04	4.86×10^{-2}	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	6.26×10^{1}	1.02×10^{1}	1.53×10^{-2}	4.00×10^{1}	6.56×10^{-1}	5.14×10^{-1}	1.76×10^{-1}	4.70×10^{-2}	7.71×10^{-4}
Modified sluicing retrieval system	2013	2043	4.60×10^{2}	7.70×10^{1}	2.86×10^{1}	2.16×10^{-2}	1.44×10^{-1}	1.66×10^{-3}	7.32×10^{-3}	2.68×10^{-3}	4.79×10^{-4}	5.53×10^{-6}
Mobile retrieval system	2013	2028	7.14	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	1.19	8.39	4.14×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2145	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2045	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator replacement	2006	2043	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Deactivation												
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	1.18×10^{3}	1.98×10^{2}	4.98×10^{1}	3.76×10^{-2}	2.87×10^{-1}	3.32×10^{-3}	1.46×10^{-2}	5.35×10^{-3}	9.58×10^{-4}	1.11×10^{-5}
Mobile retrieval system	2013	2028	5.09×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	(a)	3.79	1.86	9.16×10^{-4}	1.17×10^{-2}	8.32×10^{-5}	5.66×10^{-4}	1.93×10^{-4}	3.93×10^{-5}	2.80×10^{-7}
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–117. Tank Closure Alternative 2B Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2015–2016	2040	2040	2040	2040	2040	2040	2040	2040	2040
Deactivation *(continued)*												
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement	2046	2046	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Ancillary equipment grouting	2013	2037	5.61	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) construction	2032	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2034	2043	(a)	5.86×10^{1}	1.35×10^{3}	6.66×10^{-1}	5.08×10^{1}	3.62×10^{-1}	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Grout facility (tank-filling) deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	(a)	2.35×10^{2}	1.52×10^{2}	7.53×10^{-2}	3.48	2.48×10^{-2}	4.74×10^{-2}	1.61×10^{-2}	3.29×10^{-3}	2.34×10^{-5}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	(a)	4.26×10^{3}	2.43×10^{4}	1.20×10^{1}	3.91×10^{3}	2.78×10^{1}	3.68×10^{1}	1.25×10^{1}	2.55	1.82×10^{-2}
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**4.05×10^{4}**	6.33×10^{3}	**3.52×10^{4}**	2.05×10^{1}	**4.91×10^{3}**	3.50×10^{1}	1.05×10^{2}	5.24×10^{1}	9.26	3.08×10^{-1}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–118. Tank Closure Alternative 2B Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2015–2016	Benzene Annual 2040	1,3-Butadiene Annual 2040	Formaldehyde Annual 2040	Mercury 24-hour 2044–2045	Toluene 24-hour 2040	Xylene 24-hour 2040
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2024	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Low-Activity Waste Vitrification Facility	2008	2017	3.76×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.46	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2043	3.52×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	2.81×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 2	2029	2030	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–118. Tank Closure Alternative 2B Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2015–2016	2040	2040	2040	2044–2045	2040	2040
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Routine operations	2006	2043	5.59	(a)	(a)	(a)	(b)	(a)	(a)
Retrieval operations	2006	2043	4.60×10^{-2}	(a)	(a)	(a)	(b)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	3.02×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant	2018	2043	(b)	1.19×10^{-4}	4.31×10^{-8}	1.33×10^{-6}	(b)	7.21×10^{-5}	2.43×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	1.19×10^{-4}	4.31×10^{-8}	1.33×10^{-6}	(b)	7.21×10^{-5}	2.43×10^{-4}
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	7.41×10^{-5}	4.19×10^{-7}	2.51×10^{-5}	(b)	6.94×10^{-2}	1.96×10^{-2}
Modified sluicing retrieval system	2013	2043	3.52×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	4.05×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2043	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2044	2045	(b)	(b)	(b)	(b)	1.17×10^{-1}	(b)	(b)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2046	2046	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)

Table G–118. Tank Closure Alternative 2B Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	**Benzene**	**1,3-Butadiene**	**Formaldehyde**	**Mercury**	**Toluene**	**Xylene**
			24-hour	**Annual**	**Annual**	**Annual**	**24-hour**	**24-hour**	**24-hour**
			2015–2016	**2040**	**2040**	**2040**	**2044–2045**	**2040**	**2040**
Closure									
Ancillary equipment grouting	2013	2037	3.03×10^{-5}	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment removal	2032	2037	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility (tank-filling) construction	2032	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility (tank-filling) operations	2034	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Grout facility (tank-filling) deactivation	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction	2028	2031	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX and SX tank farm soil removal	2032	2037	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation	2038	2040	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	(b)	3.85×10^{-3}	1.12×10^{-4}	3.60×10^{-3}	(a)	3.09	9.37×10^{-1}
Postclosure care	2046	2145	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.20×10^{1}	4.59×10^{-3}	1.27×10^{-4}	4.10×10^{-3}	$\mathbf{1.17\times10^{-1}}$	3.62	1.10

a Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding acceptable source impact level are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–119. Tank Closure Alternative 3A Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	1.89×10^{4}	2.67×10^{3}	2.75×10^{3}	1.47	(a)	(a)	2.55×10^{1}	8.50	1.46	1.36×10^{-2}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	1.90×10^{3}	3.19×10^{2}	7.34×10^{1}	5.54×10^{-2}	2.66	3.07×10^{-2}	1.76×10^{-2}	6.44×10^{-3}	1.15×10^{-3}	1.33×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	1.25×10^{3}	2.01×10^{2}	5.67×10^{2}	2.80×10^{-1}	7.90	5.62×10^{-2}	1.81×10^{-1}	6.14×10^{-2}	1.25×10^{-2}	8.91×10^{-5}
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-East Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–119. Tank Closure Alternative 3A Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Operations												
IHLW Interim Storage Facility	2018	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2039	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2039	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2039	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2039	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2039	1.13×10^{2}	3.47×10^{1}	2.48×10^{2}	1.19	4.15×10^{-1}	1.93×10^{-2}	1.21×10^{1}	7.45	1.25	5.81×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	(a)	(a)	(a)	4.00×10^{1}	6.56×10^{-1}	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	5.28×10^{2}	8.85×10^{1}	3.28×10^{1}	2.47×10^{-2}	1.65×10^{-1}	1.90×10^{-3}	8.41×10^{-3}	3.07×10^{-3}	5.50×10^{-4}	6.34×10^{-6}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	8.54	1.37	9.68	4.78×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2018	2039	3.98×10^{1}	1.09×10^{1}	8.48×10^{1}	8.08×10^{-2}	1.19	8.56×10^{-3}	2.27×10^{1}	9.60	3.00	2.16×10^{-2}
Solid-Liquid Separations Facility	2018	2039	3.04×10^{3}	4.35×10^{2}	5.18×10^{2}	1.32×10^{-1}	2.13	9.12×10^{-3}	4.09	1.36	2.44×10^{-1}	1.04×10^{-3}
Bulk Vitrification Facility, 200-East Area	2018	2039	2.28×10^{1}	4.89	8.49×10^{1}	1.38×10^{-1}	7.85×10^{-1}	1.47×10^{-2}	2.24×10^{1}	7.80	1.95	3.64×10^{-2}
Effluent Treatment Facility	2006	2042	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2040	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}

Table G–119. Tank Closure Alternative 3A Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter): Carbon Monoxide 1-hour 2035–2036	Carbon Monoxide 8-hour 2035–2036	Nitrogen Dioxide 1-hour 2035–2036	Nitrogen Dioxide Annual 2035–2036	PM_{10} 24-hour 2039	PM_{10} Annual 2039	Sulfur Dioxide 1-hour 2035–2036	Sulfur Dioxide 3-hour 2035–2036	Sulfur Dioxide 24-hour 2035–2036	Sulfur Dioxide Annual 2035–2036
Deactivation												
Modified sluicing retrieval system	2013	2039	1.36×10^{3}	2.27×10^{2}	5.72×10^{1}	4.31×10^{-2}	3.30×10^{-1}	3.81×10^{-3}	1.68×10^{-2}	6.15×10^{-3}	1.10×10^{-3}	1.27×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	2.73×10^{1}	4.38	2.14	1.06×10^{-3}	1.35×10^{-2}	9.60×10^{-5}	6.54×10^{-4}	2.22×10^{-4}	4.53×10^{-5}	3.23×10^{-7}
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility, 200-West Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-East Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–119. Tank Closure Alternative 3A Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Closure												
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	3.66×10^{2}	5.86×10^{1}	1.35×10^{3}	6.66×10^{-1}	5.08×10^{1}	3.62×10^{-1}	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	1.47×10^{3}	2.35×10^{2}	1.52×10^{2}	7.53×10^{-2}	(a)	(a)	4.74×10^{-2}	1.61×10^{-2}	3.29×10^{-3}	2.34×10^{-5}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	2.66×10^{4}	4.26×10^{3}	2.43×10^{4}	1.20×10^{1}	3.91×10^{3}	2.78×10^{1}	3.68×10^{1}	1.25×10^{1}	2.55	1.82×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**6.09×10^{4}**	9.36×10^{3}	**3.78×10^{4}**	1.79×10^{1}	**4.91×10^{3}**	3.49×10^{1}	1.32×10^{2}	5.00×10^{1}	1.09×10^{1}	1.51×10^{-1}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold.**

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–120. Tank Closure Alternative 3A Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2016	Benzene Annual 2035–2038	1,3-Butadiene Annual 2035–2038	Formaldehyde Annual 2035–2038	Mercury 24-hour 2018–2039	Toluene 24-hour 2035–2038	Xylene 24-hour 2035–2038
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2019	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(a)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	1.52×10^{-3}	1.79×10^{-5}	7.52×10^{-4}	(b)	2.10	5.97×10^{-1}
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.46	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	3.21×10^{-1}	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2008	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility, 200-West Area	2016	2017	3.23×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2016	2017	3.04×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility, 200-East Area	2016	2017	1.82×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–120. Tank Closure Alternative 3A Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2018–2039	2035–2038	2035–2038
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	5.59	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2039	4.60×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	3.02×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	(b)	5.10×10^{-5}	1.84×10^{-8}	5.70×10^{-7}	7.02×10^{-3}	3.09×10^{-5}	1.04×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	4.63×10^{-1}	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.99×10^{-3}	(b)	(b)	(b)	(a)	(b)	(b)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Bulk Vitrification Facility, 200-West Area	2018	2039	(b)	1.06×10^{-6}	1.23×10^{-10}	5.20×10^{-9}	6.72×10^{-3}	1.91×10^{-5}	5.44×10^{-5}
Solid-Liquid Separations Facility	2018	2039	(b)	1.20×10^{-4}	1.54×10^{-6}	5.65×10^{-5}	(a)	3.49×10^{-1}	9.96×10^{-2}
Bulk Vitrification Facility, 200-East Area	2018	2039	(b)	1.12×10^{-6}	1.75×10^{-10}	6.63×10^{-9}	3.13×10^{-3}	6.71×10^{-6}	1.93×10^{-5}
Effluent Treatment Facility	2006	2042	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2040	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(a)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}

Table G–120. Tank Closure Alternative 3A Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2018–2039	2035–2038	2035–2038
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2041	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility, 200-West Area	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility, 200-East Area	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 1	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 1	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–120. Tank Closure Alternative 3A Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	**Benzene**	**1,3-Butadiene**	**Formaldehyde**	**Mercury**	**Toluene**	**Xylene**
			24-hour	**Annual**	**Annual**	**Annual**	**24-hour**	**24-hour**	**24-hour**
			2016	**2035–2038**	**2035–2038**	**2035–2038**	**2018–2039**	**2035–2038**	**2035–2038**
Closure									
Grout facility (tank-filling) construction	2028	2029	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Grout facility (tank-filling) operations	2030	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment grouting	2012	2032	3.61×10^{-5}	(b)	(b)	(b)	(a)	(b)	(b)
Ancillary equipment removal	2028	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BX and SX tank farm soil removal	2028	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction	2024	2027	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation	2034	2036	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	(b)	3.85×10^{-3}	1.12×10^{-4}	3.60×10^{-3}	(a)	3.09	9.37×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Postclosure care	2042	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.22×10^{1}	5.97×10^{-3}	1.46×10^{-4}	4.88×10^{-3}	1.69×10^{-2}	6.00	1.78

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–121. Tank Closure Alternative 3B Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	1.89×10^{4}	2.67×10^{3}	2.75×10^{3}	1.47	(a)	(a)	2.55×10^{1}	8.50	1.46	1.36×10^{-2}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	1.90×10^{3}	3.19×10^{2}	7.34×10^{1}	5.54×10^{-2}	2.66	3.07×10^{-2}	1.76×10^{-2}	6.44×10^{-3}	1.15×10^{-3}	1.33×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	1.25×10^{3}	2.01×10^{2}	5.67×10^{2}	2.80×10^{-1}	7.90	5.62×10^{-2}	1.81×10^{-1}	6.14×10^{-2}	1.25×10^{-2}	8.91×10^{-5}
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-East Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–121. Tank Closure Alternative 3B Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Operations												
IHLW Interim Storage Facility	2018	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2039	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2039	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2039	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2039	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2039	1.13×10^{2}	3.47×10^{1}	2.48×10^{2}	1.19	4.15×10^{-1}	1.93×10^{-2}	1.21×10^{1}	7.45	1.25	5.81×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	(a)	(a)	(a)	4.00×10^{1}	6.56×10^{-1}	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	5.28×10^{2}	8.85×10^{1}	3.28×10^{1}	2.47×10^{-2}	1.65×10^{-1}	1.90×10^{-3}	8.41×10^{-3}	3.07×10^{-3}	5.50×10^{-4}	6.34×10^{-6}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	8.54	1.37	9.68	4.78×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-West Area	2018	2039	7.58×10^{2}	2.07×10^{2}	1.63×10^{2}	1.56×10^{-1}	1.52	1.09×10^{-2}	1.02	4.33×10^{-1}	1.35×10^{-1}	9.75×10^{-4}
Solid-Liquid Separations Facility	2018	2039	3.04×10^{3}	4.35×10^{2}	5.18×10^{2}	1.32×10^{-1}	2.13	9.12×10^{-3}	4.09	1.36	2.44×10^{-1}	1.04×10^{-3}
Cast Stone Facility, 200-East Area	2018	2039	4.19×10^{2}	8.95×10^{1}	1.60×10^{2}	2.61×10^{-1}	9.88×10^{-1}	1.85×10^{-2}	5.68×10^{-1}	1.98×10^{-1}	4.95×10^{-2}	9.25×10^{-4}
Effluent Treatment Facility	2006	2042	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2040	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}

Table G–121. Tank Closure Alternative 3B Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Deactivation												
Modified sluicing retrieval system	2013	2039	1.36×10^{3}	2.27×10^{2}	5.72×10^{1}	4.31×10^{-2}	3.30×10^{-1}	3.81×10^{-3}	1.68×10^{-2}	6.15×10^{-3}	1.10×10^{-3}	1.27×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	2.73×10^{1}	4.38	2.14	1.06×10^{-3}	1.35×10^{-2}	9.60×10^{-5}	6.54×10^{-4}	2.22×10^{-4}	4.53×10^{-5}	3.23×10^{-7}
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Cast Stone Facility, 200-West Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility, 200-East Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–121. Tank Closure Alternative 3B Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		**Nitrogen Dioxide**		**PM_{10}**		**Sulfur Dioxide**			
			1-hour	**8-hour**	**1-hour**	**Annual**	**24-hour**	**Annual**	**1-hour**	**3-hour**	**24-hour**	**Annual**
			2035–2036	**2035–2036**	**2035–2036**	**2035–2036**	**2039**	**2039**	**2035–2036**	**2035–2036**	**2035–2036**	**2035–2036**
Closure												
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	3.66×10^{2}	5.86×10^{1}	1.35×10^{3}	6.66×10^{-1}	5.08×10^{1}	3.62×10^{-1}	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	1.47×10^{3}	2.35×10^{2}	1.52×10^{2}	7.53×10^{-2}	(a)	(a)	4.74×10^{-2}	1.61×10^{-2}	3.29×10^{-3}	2.34×10^{-5}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	2.66×10^{4}	4.26×10^{3}	2.43×10^{4}	1.20×10^{1}	3.91×10^{3}	2.78×10^{1}	3.68×10^{1}	1.25×10^{1}	2.55	1.82×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			$\mathbf{6.20\times10^{4}}$	9.64×10^{3}	$\mathbf{3.80\times10^{4}}$	1.81×10^{1}	$\mathbf{4.91\times10^{3}}$	3.49×10^{1}	8.82×10^{1}	3.33×10^{1}	6.17	9.45×10^{-2}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold.**

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–122. Tank Closure Alternative 3B Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2041–2042	2035–2038	2035–2038
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2019	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	1.52×10^{-3}	1.79×10^{-5}	7.52×10^{-4}	(b)	2.10	5.97×10^{-1}
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.46	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2026	3.21×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2008	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cast Stone Facility, 200-West Area	2016	2017	2.20×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2016	2017	3.04×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Cast Stone Facility, 200-East Area	2016	2017	1.24×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–122. Tank Closure Alternative 3B Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2041–2042	2035–2038	2035–2038
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Routine operations	2006	2039	5.59	(a)	(a)	(a)	(b)	(a)	(a)
Retrieval operations	2006	2039	4.60×10^{-2}	(a)	(a)	(a)	(b)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	3.02×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant	2018	2039	(b)	5.10×10^{-5}	1.84×10^{-8}	5.70×10^{-7}	(b)	3.09×10^{-5}	1.04×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2026	4.63×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.99×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Cast Stone Facility, 200-West Area	2018	2039	(b)	1.18×10^{-4}	1.72×10^{-6}	6.69×10^{-5}	(b)	1.92×10^{-1}	5.49×10^{-2}
Solid-Liquid Separations Facility	2018	2039	(b)	1.20×10^{-4}	1.54×10^{-6}	5.65×10^{-5}	(b)	3.49×10^{-1}	9.96×10^{-2}
Cast Stone Facility, 200-East Area	2018	2039	(b)	1.33×10^{-4}	2.62×10^{-6}	9.27×10^{-5}	(b)	6.76×10^{-2}	1.96×10^{-2}
Effluent Treatment Facility	2006	2042	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2040	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}

Table G–122. Tank Closure Alternative 3B Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2041–2042	2035–2038	2035–2038
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(b)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Waste Treatment Plant	2041	2042	(b)	(b)	(b)	(b)	7.86×10^{-3}	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Cast Stone Facility, 200-West Area	2040	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Solid-Liquid Separations Facility	2040	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Cast Stone Facility, 200-East Area	2040	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement	2041	2041	(b)	(b)	(b)	(b)	(a)	(b)	(b)

Table G–122. Tank Closure Alternative 3B Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2041–2042	2035–2038	2035–2038
Closure									
Grout facility (tank-filling) construction	2028	2029	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility (tank-filling) operations	2030	2039	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment grouting	2012	2032	3.61×10^{-5}	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment removal	2028	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX and SX tank farm soil removal	2028	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction	2024	2027	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation	2034	2036	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	(b)	3.85×10^{-3}	1.12×10^{-4}	3.60×10^{-3}	(a)	3.09	9.37×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care	2042	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.22×10^{1}	6.22×10^{-3}	1.51×10^{-4}	5.04×10^{-3}	7.86×10^{-3}	6.26	1.86

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.
Source: SAIC 2010a.

Table G–123. Tank Closure Alternative 3C Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	1.89×10^{4}	2.67×10^{3}	2.75×10^{3}	1.47	(a)	(a)	2.55×10^{1}	8.50	1.46	1.36×10^{-2}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	1.90×10^{3}	3.19×10^{2}	7.34×10^{1}	5.54×10^{-2}	2.66	3.07×10^{-2}	1.76×10^{-2}	6.44×10^{-3}	1.15×10^{-3}	1.33×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	1.25×10^{3}	2.01×10^{2}	5.67×10^{2}	2.80×10^{-1}	7.90	5.62×10^{-2}	1.81×10^{-1}	6.14×10^{-2}	1.25×10^{-2}	8.91×10^{-5}
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-East Area	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–123. Tank Closure Alternative 3C Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Operations												
IHLW Interim Storage Facility	2018	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2039	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2039	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2039	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2039	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2039	1.13×10^{2}	3.47×10^{1}	2.48×10^{2}	1.19	4.15×10^{-1}	1.93×10^{-2}	1.21×10^{1}	7.45	1.25	5.81×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	(a)	(a)	(a)	4.00×10^{1}	6.56×10^{-1}	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2039	5.28×10^{2}	8.85×10^{1}	3.28×10^{1}	2.47×10^{-2}	1.65×10^{-1}	1.90×10^{-3}	8.41×10^{-3}	3.07×10^{-3}	5.50×10^{-4}	6.34×10^{-6}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	8.54	1.37	9.68	4.78×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2018	2039	5.63×10^{2}	1.54×10^{2}	1.86×10^{2}	1.77×10^{-1}	3.39×10^{-3}	2.44×10^{-5}	6.83×10^{-1}	2.90×10^{-1}	9.03×10^{-2}	6.51×10^{-4}
Solid-Liquid Separations Facility	2018	2039	3.04×10^{3}	4.35×10^{2}	5.18×10^{2}	1.32×10^{-1}	2.13	9.12×10^{-3}	4.09	1.36	2.44×10^{-1}	1.04×10^{-3}
Steam Reforming Facility, 200-East Area	2018	2039	4.73×10^{2}	1.01×10^{2}	1.50×10^{2}	2.44×10^{-1}	1.32×10^{-3}	2.48×10^{-5}	3.73×10^{-1}	1.30×10^{-1}	3.25×10^{-2}	6.07×10^{-4}
Effluent Treatment Facility	2006	2042	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2040	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}

Table G–123. Tank Closure Alternative 3C Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Deactivation												
Modified sluicing retrieval system	2013	2039	1.36×10^{3}	2.27×10^{2}	5.72×10^{1}	4.31×10^{-2}	3.30×10^{-1}	3.81×10^{-3}	1.68×10^{-2}	6.15×10^{-3}	1.10×10^{-3}	1.27×10^{-5}
Mobile retrieval system	2013	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2027	2039	2.73×10^{1}	4.38	2.14	1.06×10^{-3}	1.35×10^{-2}	9.60×10^{-5}	6.54×10^{-4}	2.22×10^{-4}	4.53×10^{-5}	3.23×10^{-7}
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2041	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Steam Reforming Facility, 200-West Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-East Area	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–123. Tank Closure Alternative 3C Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2035–2036	2035–2036	2035–2036	2035–2036	2039	2039	2035–2036	2035–2036	2035–2036	2035–2036
Closure												
Grout facility (tank-filling) construction	2028	2029	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2030	2039	3.66×10^{2}	5.86×10^{1}	1.35×10^{3}	6.68×10^{-1}	5.08×10^{1}	3.62×10^{-1}	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Grout facility (tank-filling) deactivation	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2028	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2024	2027	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2034	2036	1.47×10^{3}	2.35×10^{2}	1.52×10^{2}	7.53×10^{-2}	(a)	(a)	4.74×10^{-2}	1.61×10^{-2}	3.29×10^{-3}	2.34×10^{-5}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	2.66×10^{4}	4.26×10^{3}	2.43×10^{4}	1.20×10^{1}	3.91×10^{3}	2.78×10^{1}	3.68×10^{1}	1.25×10^{1}	2.55	1.82×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2042	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**6.19×10^{4}**	9.60×10^{3}	**3.80×10^{4}**	1.81×10^{1}	**4.91×10^{3}**	3.49×10^{1}	8.76×10^{1}	3.31×10^{1}	6.11	9.39×10^{-2}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–124. Tank Closure Alternative 3C Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2018–2039	2035–2038	2035–2038
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2019	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(a)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	1.52×10^{-3}	1.79×10^{-5}	7.52×10^{-4}	(a)	2.10	5.97×10^{-1}
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.46	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	3.21×10^{-1}	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2008	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Steam Reforming Facility, 200-West Area	2016	2017	7.41×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2016	2017	3.04×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Steam Reforming Facility, 200-East Area	2016	2017	8.37×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Underground transfer lines	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–124. Tank Closure Alternative 3C Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2018–2039	2035–2038	2035–2038
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2039	5.59	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2039	4.60×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2039	3.02×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2039	(b)	5.10×10^{-5}	1.84×10^{-8}	5.70×10^{-7}	7.02×10^{-3}	3.09×10^{-5}	1.04×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Modified sluicing retrieval system	2013	2039	4.04×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	4.63×10^{-1}	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2141	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.99×10^{-3}	(b)	(b)	(b)	(a)	(b)	(b)
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Steam Reforming Facility, 200-West Area	2018	2039	(b)	1.93×10^{-6}	6.14×10^{-10}	1.94×10^{-8}	4.04×10^{-3}	1.23×10^{-5}	3.81×10^{-5}
Solid-Liquid Separations Facility	2018	2039	(b)	1.20×10^{-4}	1.54×10^{-6}	5.65×10^{-5}	(a)	3.49×10^{-1}	9.96×10^{-2}
Steam Reforming Facility, 200-East Area	2018	2039	(b)	1.87×10^{-6}	6.09×10^{-10}	1.92×10^{-8}	1.88×10^{-3}	4.31×10^{-6}	1.35×10^{-5}
Effluent Treatment Facility	2006	2042	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2040	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(a)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
Modified sluicing retrieval system	2013	2039	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2026	(a)	(b)	(b)	(b)	(a)	(b)	(b)
Vacuum-based retrieval system	2027	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2041	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–124. Tank Closure Alternative 3C Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2018–2039	2035–2038	2035–2038
Deactivation *(continued)*									
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Steam Reforming Facility, 200-West Area	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Steam Reforming Facility, 200-East Area	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 1	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 1	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Grout facility (tank-filling) construction	2028	2029	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Grout facility (tank-filling) operations	2030	2039	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) deactivation	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment grouting	2012	2032	3.61×10^{-5}	(b)	(b)	(b)	(a)	(b)	(b)
Ancillary equipment removal	2028	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BX and SX tank farm soil removal-closure	2028	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction	2024	2027	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation	2034	2036	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2035	2041	(b)	3.85×10^{-3}	1.12×10^{-4}	3.60×10^{-3}	(a)	3.09	9.37×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Postclosure care	2042	2141	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.23×10^{1}	5.98×10^{-3}	1.46×10^{-4}	4.88×10^{-3}	1.29×10^{-2}	6.00	1.78

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–125. Tank Closure Alternative 4 Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2038–2039	2038–2039	2042	2042	2038–2039	2038–2039	2038–2039	2038–2039
Construction												
Canister Storage Building	2006	2016	4.37×10^{1}	6.76	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2022	3.15×10^{2}	4.88×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	1.80×10^{1}	2.88	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	5.67×10^{3}	9.09×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.72×10^{4}	2.42×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2038	2041	(a)	(a)	9.64×10^{2}	6.53×10^{-1}	(a)	(a)	8.92	3.19	6.02×10^{-1}	6.04×10^{-3}
Waste receiver facilities	2013	2017	1.87×10^{3}	2.99×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	3.26×10^{2}	5.23×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2042	1.46×10^{3}	2.34×10^{2}	6.33×10^{2}	3.12×10^{-1}	8.44	6.00×10^{-2}	2.03×10^{-1}	6.89×10^{-2}	1.41×10^{-2}	1.00×10^{-4}
Vacuum-based retrieval system	2013	2042	5.43×10^{2}	8.71×10^{1}	2.46×10^{2}	1.21×10^{-1}	3.42	2.44×10^{-2}	7.82×10^{-2}	2.66×10^{-2}	5.42×10^{-3}	3.86×10^{-5}
Chemical wash system	2013	2042	3.68	5.90×10^{-1}	1.96×10^{1}	9.69×10^{-3}	1.70×10^{-1}	1.21×10^{-3}	6.14×10^{-3}	2.09×10^{-3}	4.26×10^{-4}	3.03×10^{-6}
HLW Melter Interim Storage Facilities	2015	2016	1.39×10^{1}	1.96	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.08×10^{3}	1.97×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	1.15×10^{3}	1.65×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2016	2017	4.82×10^{2}	7.46×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	3.56×10^{3}	5.50×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–125. Tank Closure Alternative 4 Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2038–2039	2038–2039	2042	2042	2038–2039	2038–2039	2038–2039	2038–2039
Operations												
IHLW Interim Storage Facility	2018	2043	(a)	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2042	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2042	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2042	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2042	(a)	(a)	2.43×10^{2}	1.16	3.48×10^{-1}	1.62×10^{-2}	1.06×10^{1}	6.48	1.08	5.05×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2042	2043	(a)	(a)	(a)	(a)	4.00×10^{1}	6.56×10^{-1}	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2042	6.70	1.07	7.59	3.75×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2042	3.70	5.94×10^{-1}	4.20	2.07×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2042	2.45	3.94×10^{-1}	8.59	4.24×10^{-3}	1.79	1.27×10^{-2}	2.44×10^{-3}	8.29×10^{-4}	1.69×10^{-4}	1.20×10^{-6}
HLW Melter Interim Storage Facilities	2018	2144	(a)	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	2.16×10^{2}	3.35×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(b)	(b)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	(a)	(a)	8.56×10^{1}	8.16×10^{-2}	(a)	(a)	2.29×10^{1}	9.69	3.02	2.18×10^{-2}
Solid-Liquid Separations Facility	2018	2039	(a)	(a)	5.18×10^{2}	1.32×10^{-1}	(a)	(a)	4.09	1.36	2.44×10^{-1}	1.04×10^{-3}
Cast Stone Facility	2018	2039	(a)	(a)	1.60×10^{2}	2.61×10^{-1}	(a)	(a)	5.68×10^{-1}	1.98×10^{-1}	4.95×10^{-2}	9.25×10^{-4}
Effluent Treatment Facility	2006	2045	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2042	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}

Table G–125. Tank Closure Alternative 4 Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2038–2039	2038–2039	2042	2042	2038–2039	2038–2039	2038–2039	2038–2039
Deactivation												
Mobile retrieval system	2013	2042	7.28×10^{2}	1.17×10^{2}	5.70×10^{1}	2.81×10^{-2}	3.29×10^{-1}	2.34×10^{-3}	1.74×10^{-2}	5.92×10^{-3}	1.21×10^{-3}	8.60×10^{-6}
Vacuum-based retrieval system	2013	2042	1.18×10^{1}	1.90	9.28×10^{-1}	4.58×10^{-4}	5.85×10^{-3}	4.16×10^{-5}	2.83×10^{-4}	9.63×10^{-5}	1.96×10^{-5}	1.40×10^{-7}
Chemical wash system	2013	2042	3.40×10^{1}	5.45	5.99	2.96×10^{-3}	3.51×10^{-2}	2.49×10^{-4}	1.91×10^{-3}	6.49×10^{-4}	1.32×10^{-4}	9.42×10^{-7}
IHLW Interim Storage Facility	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2040	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement	2046	2046	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–125. Tank Closure Alternative 4 Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2038–2039	2038–2039	2042	2042	2038–2039	2038–2039	2038–2039	2038–2039
Closure												
Grout facility (tank-filling) construction	2031	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2033	2042	(a)	(a)	1.07×10^{3}	5.27×10^{-1}	5.21	3.71×10^{-2}	4.35×10^{-1}	1.48×10^{-1}	3.02×10^{-2}	2.15×10^{-4}
Grout facility (tank-filling) deactivation	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2012	2032	4.83	7.74×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2018	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2042	2044	(a)	(a)	(a)	(a)	3.48	2.48×10^{-2}	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	(a)	(a)	1.36×10^{4}	6.72	2.40×10^{3}	1.71×10^{1}	2.06×10^{1}	7.00	1.43	1.02×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2045	2144	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2034	2041	(a)	(a)	5.63×10^{2}	3.81×10^{-1}	(a)	(a)	1.91×10^{-1}	6.85×10^{-2}	1.29×10^{-2}	1.30×10^{-4}
SX tank farm removal	2022	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2034	2041	(a)	(a)	2.62×10^{3}	1.45	(a)	(a)	8.92×10^{-1}	3.43×10^{-1}	6.98×10^{-2}	4.94×10^{-4}
Preprocessing Facility construction	2019	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2022	2042	(a)	(a)	1.53×10^{1}	2.49×10^{-2}	9.72×10^{-5}	1.82×10^{-6}	1.12	3.91×10^{-1}	9.74×10^{-2}	1.82×10^{-3}
Preprocessing Facility deactivation	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			4.00×10^{4}	6.03×10^{3}	$\mathbf{2.84\times10^{4}}$	1.36×10^{1}	$\mathbf{3.36\times10^{3}}$	2.39×10^{1}	7.79×10^{1}	3.15×10^{1}	7.10	9.46×10^{-2}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–126. Tank Closure Alternative 4 Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2016–2017	2038–2039	2038–2039	2018–2039	2016–2017	2016–2017
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(b)	(b)	(b)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2022	(a)	(a)	(b)	(b)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(b)	(b)	(a)	(a)	(a)
Tank upgrades	2006	2025	8.81×10^{-2}	(a)	(b)	(b)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.29	2.52×10^{-3}	(b)	(b)	(b)	1.69	5.06×10^{-1}
Cesium and Strontium Capsule Processing Facility	2038	2041	(b)	(b)	7.94×10^{-6}	3.34×10^{-4}	(a)	(b)	(b)
Waste receiver facilities	2013	2017	(a)	(a)	(b)	(b)	(b)	(a)	(a)
Tank risers	2013	2016	2.68	(a)	(b)	(b)	(b)	(a)	(a)
Mobile retrieval system	2013	2042	4.03×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	2.23×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	6.25×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(b)	(b)	(b)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Transuranic Waste Interim Storage Facility	2008	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility	2016	2017	3.23×10^{-2}	9.86×10^{-5}	(b)	(b)	(b)	1.61×10^{-1}	4.62×10^{-2}
Solid-Liquid Separations Facility	2016	2017	3.04×10^{-2}	5.06×10^{-5}	(b)	(b)	(b)	1.30×10^{-1}	3.75×10^{-2}
Cast Stone Facility	2016	2017	1.24×10^{-2}	5.38×10^{-5}	(b)	(b)	(b)	6.22×10^{-2}	1.78×10^{-2}
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	3.63×10^{-4}	(b)	(b)	(b)	4.65×10^{-1}	1.32×10^{-1}
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–126. Tank Closure Alternative 4 Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2016–2017	2038–2039	2038–2039	2018–2039	2016–2017	2016–2017
Operations									
IHLW Interim Storage Facility	2018	2043	(b)	(b)	(a)	(a)	(a)	(b)	(b)
Other infrastructure upgrades	2006	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2042	5.59	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2042	4.60×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2042	3.02×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2042	(b)	(b)	1.85×10^{-8}	5.71×10^{-7}	6.25×10^{-3}	(b)	(b)
Waste Treatment Plant, cesium and strontium capsules	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2042	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2042	4.03×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	2.23×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	6.25×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2144	(b)	(b)	(a)	(a)	(a)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	1.99×10^{-3}	1.99×10^{-5}	(b)	(b)	(a)	2.87×10^{-2}	8.12×10^{-3}
Transuranic Waste Interim Storage Facility	2009	2034	(a)	(a)	(b)	(b)	(a)	(a)	(a)
Bulk Vitrification Facility	2018	2039	(b)	(b)	1.23×10^{-10}	5.20×10^{-9}	6.78×10^{-3}	(b)	(b)
Solid-Liquid Separations Facility	2018	2039	(b)	(b)	1.54×10^{-6}	5.65×10^{-5}	(a)	(b)	(b)
Cast Stone Facility	2018	2039	(b)	(b)	2.62×10^{-6}	9.27×10^{-5}	(a)	(b)	(b)
Effluent Treatment Facility	2006	2045	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2042	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(a)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}

Table G–126. Tank Closure Alternative 4 Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2016–2017	2038–2039	2038–2039	2018–2039	2016–2017	2016–2017
Deactivation									
Mobile retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2044	2044	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2044	2045	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2044	2044	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Transuranic Waste Interim Storage Facility	2035	2035	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Bulk Vitrification Facility	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Solid-Liquid Separations Facility	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cast Stone Facility	2040	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 1	2046	2046	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 1	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Grout facility (tank-filling) construction	2031	2032	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Grout facility (tank-filling) operations	2033	2042	(b)	(b)	4.67×10^{-6}	1.41×10^{-4}	(a)	(b)	(b)
Grout facility (tank-filling) deactivation	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment grouting	2012	2032	2.44×10^{-3}	2.34×10^{-6}	(b)	(b)	(a)	1.44×10^{-4}	1.00×10^{-4}
Containment structure construction	2018	2021	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation	2042	2044	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2038	2044	(b)	(b)	5.83×10^{-5}	1.75×10^{-3}	(a)	(b)	(b)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Postclosure care	2045	2144	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–126. Tank Closure Alternative 4 Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	**Benzene**	**1,3-Butadiene**	**Formaldehyde**	**Mercury**	**Toluene**	**Xylene**
			24-hour	**Annual**	**Annual**	**Annual**	**24-hour**	**24-hour**	**24-hour**
			2016	**2016–2017**	**2038–2039**	**2038–2039**	**2018–2039**	**2016–2017**	**2016–2017**
Closure *(continued)*									
BX tank farm removal	2022	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BX tank farm deep soil removal	2034	2041	(b)	(b)	3.38×10^{-6}	1.02×10^{-4}	(a)	(b)	(b)
SX tank farm removal	2022	2033	(b)	(b)	(b)	(b)	(a)	(b)	(b)
SX tank farm deep soil removal	2034	2041	(b)	(b)	1.29×10^{-5}	3.89×10^{-4}	(a)	(b)	(b)
Preprocessing Facility construction	2019	2021	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Preprocessing Facility operations	2022	2042	(b)	(b)	1.31×10^{-10}	7.47×10^{-9}	(a)	(b)	(b)
Preprocessing Facility deactivation	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.21×10^{1}	3.54×10^{-3}	1.07×10^{-4}	3.34×10^{-3}	1.30×10^{-2}	3.00	8.96×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.
Source: SAIC 2010a.

Table G–127. Tank Closure Alternative 5 Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2029–2032	2029–2032	2029–2032	2037	2037	2029–2032	2029–2032	2029–2032	2029–2032
Construction												
Canister Storage Building	2006	2016	4.37×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	3.15×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	1.80×10^{1}	2.88	1.31×10^{1}	6.45×10^{-3}	(a)	(a)	4.12×10^{-3}	1.40×10^{-3}	2.86×10^{-4}	2.04×10^{-6}
Tank upgrades	2006	2025	5.67×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.72×10^{4}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2029	2032	(a)	1.03×10^{3}	9.64×10^{2}	6.53×10^{-1}	(a)	(a)	8.92	3.19	6.02×10^{-1}	6.04×10^{-3}
Waste receiver facilities	2013	2017	1.87×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	2.99×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2014	2019	9.21×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sulfate Removal Facility	2016	2017	8.85×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2033	1.16×10^{3}	1.86×10^{2}	4.47×10^{1}	2.20×10^{-2}	(a)	(a)	1.07×10^{-2}	3.64×10^{-3}	7.43×10^{-4}	5.29×10^{-6}
Mobile retrieval system	2013	2023	1.48×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	2.61×10^{2}	7.37×10^{2}	3.64×10^{-1}	(a)	(a)	2.35×10^{-1}	7.98×10^{-2}	1.63×10^{-2}	1.16×10^{-4}
HLW Melter Interim Storage Facilities	2015	2016	1.39×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	1.08×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	1.15×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2016	2017	4.82×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	3.56×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations												
IHLW Interim Storage Facility	2018	2034	(a)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2033	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Routine operations	2006	2033	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(a)	(a)	(b)	(b)	(b)	(b)

Table G–127. Tank Closure Alternative 5 Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2029–2032	2029–2032	2029–2032	2037	2037	2029–2032	2029–2032	2029–2032	2029–2032
Operations *(continued)*												
Retrieval operations	2006	2033	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(a)	(a)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2033	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(a)	(a)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2033	(a)	8.58×10^{1}	8.53×10^{2}	4.08	(a)	(a)	1.95×10^{1}	1.19×10^{1}	2.00	9.31×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2033	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2020	2033	(a)	8.79×10^{-2}	5.95×10^{-1}	4.49×10^{-4}	(a)	(a)	(b)	(b)	(b)	(b)
Sulfate Removal Facility	2018	2033	(a)	2.18×10^{2}	1.70×10^{2}	2.55×10^{-1}	(a)	(a)	1.79	6.13×10^{-1}	1.64×10^{-1}	2.69×10^{-3}
Modified sluicing retrieval system	2013	2033	3.22×10^{2}	5.15×10^{1}	2.00×10^{1}	9.85×10^{-3}	(a)	(a)	5.12×10^{-3}	1.74×10^{-3}	3.55×10^{-4}	2.53×10^{-6}
Mobile retrieval system	2013	2023	6.81	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	1.78	1.26×10^{1}	6.21×10^{-3}	(a)	(a)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2139	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	2.16×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility	2018	2033	(a)	1.49×10^{1}	1.07×10^{2}	1.02×10^{-1}	(a)	(a)	2.85×10^{1}	1.21×10^{1}	3.77	2.72×10^{-2}
Solid-Liquid Separations Facility	2018	2033	(a)	5.98×10^{2}	7.13×10^{2}	1.82×10^{-1}	(a)	(a)	5.63	1.88	3.35×10^{-1}	1.44×10^{-3}
Cast Stone Facility	2018	2033	(a)	1.23×10^{2}	2.20×10^{2}	3.59×10^{-1}	(a)	(a)	7.82×10^{-1}	2.73×10^{-1}	6.80×10^{-2}	1.27×10^{-3}
Effluent Treatment Facility	2006	2036	7.85	2.41	2.13	1.02×10^{-2}	(a)	(a)	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2034	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	(a)	(a)	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Deactivation												
Sulfate Removal Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2033	8.25×10^{2}	1.32×10^{2}	3.48×10^{1}	1.72×10^{-2}	(a)	(a)	1.02×10^{-2}	3.48×10^{-3}	7.10×10^{-4}	5.05×10^{-6}
Mobile retrieval system	2013	2023	7.40×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2024	2033	(a)	5.69	2.78	1.37×10^{-3}	(a)	(a)	8.50×10^{-4}	2.89×10^{-4}	5.89×10^{-5}	4.19×10^{-7}

Table G–127. Tank Closure Alternative 5 Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2029–2032	2029–2032	2029–2032	2037	2037	2029–2032	2029–2032	2029–2032	2029–2032
Deactivation *(continued)*												
IHLW Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2037	2037	(a)	(a)	(a)	(a)	6.06×10^{2}	5.65	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Grout facility (tank-filling) construction	2022	2023	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility (tank-filling) operations	2024	2033	(a)	5.86×10^{1}	1.35×10^{3}	6.66×10^{-1}	(a)	(a)	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Grout facility (tank-filling) deactivation	2034	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2013	2033	5.68	9.11×10^{-1}	2.47×10^{1}	1.22×10^{-2}	(a)	(a)	7.91×10^{-3}	2.69×10^{-3}	5.49×10^{-4}	3.90×10^{-6}
Hanford barrier construction	2029	2039	(a)	4.52×10^{3}	2.58×10^{4}	1.27×10^{1}	3.92×10^{3}	2.79×10^{1}	3.90×10^{1}	1.33×10^{1}	2.71	1.93×10^{-2}
Decontamination and decommissioning of 10 selected facilities	2012	2022	4.10×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2040	2139	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**5.16×10^{4}**	8.10×10^{3}	**3.86×10^{4}**	2.12×10^{1}	**5.32×10^{3}**	3.57×10^{1}	1.12×10^{2}	4.61×10^{1}	1.01×10^{1}	1.53×10^{-1}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–128. Tank Closure Alternative 5 Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2029–2032	2029–2032	2029–2032	2029–2032	2018–2033	2029–2032	2029–2032
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2019	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2029	2032	1.18×10^{-1}	6.77×10^{-4}	7.94×10^{-6}	3.34×10^{-4}	(b)	8.67×10^{-1}	2.47×10^{-1}
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2014	2019	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Sulfate Removal Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2033	2.61×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Vacuum-based retrieval system	2024	2033	6.68×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2008	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Transuranic Waste Interim Storage Facility	2008	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2016	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer lines	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–128. Tank Closure Alternative 5 Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2029–2032	2029–2032	2029–2032	2029–2032	2018–2033	2029–2032	2029–2032
Operations									
IHLW Interim Storage Facility	2018	2032	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2033	5.59	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2033	4.60×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2033	3.02×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2033	6.54×10^{-1}	1.76×10^{-4}	6.90×10^{-8}	2.10×10^{-6}	9.78×10^{-3}	5.76×10^{-5}	2.26×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2034	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2033	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement	2020	2033	2.97×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Sulfate Removal Facility	2018	2033	2.88×10^{-2}	2.95×10^{-4}	3.22×10^{-6}	1.40×10^{-4}	(b)	2.37×10^{-1}	6.74×10^{-2}
Modified sluicing retrieval system	2013	2033	2.61×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Vacuum-based retrieval system	2024	2033	6.68×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2139	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed Transuranic Waste Facilities	2009	2010	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2015	2019	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Transuranic Waste Interim Storage Facility	2009	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Bulk Vitrification Facility	2018	2033	8.69×10^{-3}	1.46×10^{-6}	1.68×10^{-10}	7.15×10^{-9}	8.39×10^{-3}	2.63×10^{-5}	7.48×10^{-5}
Solid-Liquid Separations Facility	2018	2033	7.55×10^{-2}	1.66×10^{-4}	2.12×10^{-6}	8.63×10^{-5}	(b)	4.80×10^{-1}	1.37×10^{-1}
Cast Stone Facility	2018	2033	3.18×10^{-2}	1.82×10^{-4}	3.60×10^{-6}	1.27×10^{-4}	(b)	9.30×10^{-2}	2.70×10^{-2}
Effluent Treatment Facility	2006	2036	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(b)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2034	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(b)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
Sulfate Removal Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2023	(a)	(a)	(a)	(a)	(b)	(a)	(a)

Table G–128. Tank Closure Alternative 5 Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2029–2032	2029–2032	2029–2032	2029–2032	2018–2033	2029–2032	2029–2032
Deactivation *(continued)*									
Vacuum-based retrieval system	2024	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2035	2036	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed Transuranic Waste Facilities	2011	2012	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed Transuranic Waste Facility	2020	2021	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Transuranic Waste Interim Storage Facility	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Bulk Vitrification Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Solid-Liquid Separations Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cast Stone Facility	2034	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 1	2037	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 1	2035	2035	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure									
Grout facility (tank-filling) construction	2022	2023	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Grout facility (tank-filling) operations	2024	2033	1.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility (tank-filling) deactivation	2034	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment grouting	2013	2033	3.07×10^{-5}	(b)	(b)	(b)	(b)	(b)	(b)
Hanford barrier construction	2029	2039	2.87	4.08×10^{-3}	1.18×10^{-4}	3.82×10^{-3}	(b)	3.28	9.94×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2012	2022	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Postclosure care	2040	2139	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Total			1.23×10^{1}	6.01×10^{-3}	1.51×10^{-4}	4.98×10^{-3}	1.82×10^{-2}	5.42	1.62

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–129. Tank Closure Alternative 6A, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2149–2150	2149–2150	2149–2150	2149–2150	2149–2150	2113–2114	2149–2150	2149–2150	2149–2150	2149–2150
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)	1.26	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2158	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)	2.53×10^{1}	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	4.44×10^{2}	7.11×10^{1}	1.93×10^{2}	9.51×10^{-2}	2.57	1.83×10^{-2}	6.17×10^{-2}	2.10×10^{-2}	4.28×10^{-3}	3.04×10^{-5}
Vacuum-based retrieval system	2013	2162	9.40×10^{1}	1.51×10^{1}	4.25×10^{1}	2.10×10^{-2}	5.92×10^{-1}	4.22×10^{-3}	1.35×10^{-2}	4.60×10^{-3}	9.39×10^{-4}	6.68×10^{-6}
Chemical wash system	2013	2162	9.48×10^{-1}	1.52×10^{-1}	5.06	2.50×10^{-3}	4.38×10^{-2}	3.12×10^{-4}	1.58×10^{-3}	5.37×10^{-4}	1.10×10^{-4}	7.80×10^{-7}
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 2	2127	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–129. Tank Closure Alternative 6A, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter): Carbon Monoxide 1-hour	Carbon Monoxide 8-hour	Nitrogen Dioxide 1-hour	Nitrogen Dioxide Annual	PM_{10} 24-hour	PM_{10} Annual	Sulfur Dioxide 1-hour	Sulfur Dioxide 3-hour	Sulfur Dioxide 24-hour	Sulfur Dioxide Annual
			2149–2150	2149–2150		2149–2150	2149–2150	2113–2114	2149–2150	2149–2150	2149–2150	2149–2150
Construction *(continued)*												
IHLW Interim Storage Module, additional	2074	2160	4.78×10^{2}	7.40×10^{1}	5.70×10^{2}	3.86×10^{-1}	1.27×10^{2}	1.28	1.74×10^{-1}	6.22×10^{-2}	1.17×10^{-2}	1.18×10^{-4}
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2083	2085	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 4	2113	2115	(a)	(a)	(a)	(a)	(a)	5.07	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 5	2143	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2040	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2065	2067	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 4	2090	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 5	2115	2117	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 6	2140	2142	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations												
IHLW Interim Storage Facility	2018	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2162	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2162	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2162	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2162	3.03×10^{2}	9.32×10^{1}	5.95×10^{2}	2.85	2.39×10^{-1}	1.11×10^{-2}	1.19×10^{1}	7.32	1.22	5.70×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2162	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	2.04	3.27×10^{-1}	2.31	1.14×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2162	6.41×10^{-1}	1.03×10^{-1}	7.26×10^{-1}	3.58×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)

Table G–129. Tank Closure Alternative 6A, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2149–2150	2149–2150	2149–2150	2149–2150	2149–2150	2113–2114	2149–2150	2149–2150	2149–2150	2149–2150
Operations *(continued)*												
Chemical wash system	2013	2162	6.32×10^{-1}	1.01×10^{-1}	2.21	1.09×10^{-3}	4.60×10^{-1}	3.28×10^{-3}	6.28×10^{-4}	2.14×10^{-4}	4.36×10^{-5}	3.10×10^{-7}
HLW Melter Interim Storage Facilities	2018	2262	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2042	2153	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2166	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2018	2163	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2167	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Deactivation												
Mobile retrieval system	2013	2162	2.22×10^{2}	3.55×10^{1}	1.74×10^{1}	8.57×10^{-3}	1.00×10^{-1}	7.12×10^{-4}	5.30×10^{-3}	1.80×10^{-3}	3.68×10^{-4}	2.62×10^{-6}
Vacuum-based retrieval system	2013	2162	2.05	3.28×10^{-1}	1.61×10^{-1}	7.92×10^{-5}	1.01×10^{-3}	7.20×10^{-6}	4.90×10^{-5}	1.67×10^{-5}	3.40×10^{-6}	2.42×10^{-8}
Chemical wash system	2013	2162	8.75	1.40	1.54	7.62×10^{-4}	9.03×10^{-3}	6.43×10^{-5}	4.92×10^{-4}	1.67×10^{-4}	3.41×10^{-5}	2.43×10^{-7}
IHLW Interim Storage Facility	2078	2188	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant original	2078	2080	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2138	2140	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 2	2164	2166	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2164	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2086	2086	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2116	2116	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 4	2146	2146	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 5	2167	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2068	2068	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2093	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–129. Tank Closure Alternative 6A, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2149–2150	2149–2150	2149–2150	2149–2150	2149–2150	2113–2114	2149–2150	2149–2150	2149–2150	2149–2150
Deactivation *(continued)*												
Evaporator replacement 4	2118	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 5	2143	2143	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 6	2168	2168	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	2.79×10^{4}	4.47×10^{3}	2.56×10^{4}	1.26×10^{1}	4.11×10^{3}	(a)	3.87×10^{1}	1.31×10^{1}	2.68	1.91×10^{-2}
Postclosure care	2151	2250	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	6.45×10^{-2}	(a)	(a)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–129. Tank Closure Alternative 6A, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Carbon Monoxide 1-hour 2149–2150	Carbon Monoxide 8-hour 2149–2150	Nitrogen Dioxide 1-hour 2149–2150	Nitrogen Dioxide Annual 2149–2150	PM_{10} 24-hour 2149–2150	PM_{10} Annual 2113–2114	Sulfur Dioxide 1-hour 2149–2150	Sulfur Dioxide 3-hour 2149–2150	Sulfur Dioxide 24-hour 2149–2150	Sulfur Dioxide Annual 2149–2150
Closure *(continued)*												
A tank farm removal	2142	2153	1.12×10^{2}	1.79×10^{1}	5.04×10^{2}	2.49×10^{-1}	4.53	(a)	1.76×10^{-1}	5.98×10^{-2}	1.22×10^{-2}	8.68×10^{-5}
AX tank farm removal	2142	2153	2.98×10^{2}	4.78×10^{1}	1.34×10^{3}	6.63×10^{-1}	1.21×10^{1}	(a)	4.69×10^{-1}	1.59×10^{-1}	3.25×10^{-2}	2.31×10^{-4}
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(a)	3.22×10^{-2}	(a)	(a)	(a)	(a)
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2042	2162	9.78×10^{-1}	2.09×10^{-1}	4.23×10^{-1}	6.88×10^{-4}	3.40×10^{-3}	6.36×10^{-5}	1.17×10^{-1}	4.07×10^{-2}	1.01×10^{-2}	1.90×10^{-4}
Preprocessing Facility deactivation	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			3.51×10^{4}	5.65×10^{3}	$\mathbf{3.64\times10^{4}}$	1.87×10^{1}	$\mathbf{5.15\times10^{3}}$	3.90×10^{1}	5.89×10^{1}	2.34×10^{1}	4.41	7.81×10^{-2}

Concentration (micrograms per cubic meter)

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–130. Tank Closure Alternative 6A, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2149–2150	2149–2150	2149–2150	2149–2150	2078–2140	2149–2150	2149–2150
Construction									
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2158	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	1.23×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2162	3.85×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2162	1.61×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant replacement 2	2127	2138	(a)	(a)	(a)	(a)	(b)	(a)	(a)
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(b)	(a)	(a)
IHLW Interim Storage Module, additional	2074	2160	(a)	(a)	(a)	(a)	(b)	(a)	(a)

Table G–130. Tank Closure Alternative 6A, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2149–2150	2149–2150	2149–2150	2149–2150	2078–2140	2149–2150	2149–2150
Construction *(continued)*									
HLW Debris Storage Facilities	2041	2110	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2083	2085	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 4	2113	2115	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 5	2143	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2040	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2065	2067	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 4	2090	2092	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 5	2115	2117	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 6	2140	2142	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
IHLW Interim Storage Facility	2018	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2162	5.59	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2162	4.60×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2162	3.02×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2162	4.70×10^{-1}	1.38×10^{-4}	4.98×10^{-8}	1.54×10^{-6}	1.45×10^{-3}	8.37×10^{-5}	2.82×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2162	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	1.23×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2162	3.85×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2162	1.61×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2262	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2042	2153	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–130. Tank Closure Alternative 6A, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2149–2150	2149–2150	2149–2150	2149–2150	2078–2140	2149–2150	2149–2150
Operations *(continued)*									
Effluent Treatment Facility	2006	2166	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(b)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2018	2163	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2167	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(b)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
Mobile retrieval system	2013	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Facility	2078	2188	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant original	2078	2080	(a)	(a)	(a)	(a)	9.11×10^{-4}	(a)	(a)
Waste Treatment Plant replacement 1	2138	2140	(a)	(a)	(a)	(a)	b	(a)	(a)
Waste Treatment Plant replacement 2	2164	2166	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2164	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2086	2086	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 3	2116	2116	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Effluent Treatment Facility replacement 4	2146	2146	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 5	2167	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2154	2154	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2068	2068	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2093	2093	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 4	2118	2118	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator replacement 5	2143	2143	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 6	2168	2168	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–130. Tank Closure Alternative 6A, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2149–2150	2149–2150	2149–2150	2149–2150	2078–2140	2149–2150	2149–2150
Closure									
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2149	2150	2.84	4.04×10^{-3}	1.17×10^{-4}	3.78×10^{-3}	(a)	3.25	9.84×10^{-1}
Postclosure care	2151	2250	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(b)	(a)	(a)
BY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(b)	(a)	(a)
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(b)	(a)	(a)
A tank farm removal	2142	2153	5.49×10^{-2}	5.28×10^{-5}	2.20×10^{-6}	6.66×10^{-5}	(a)	3.70×10^{-3}	2.39×10^{-3}
AX tank farm removal	2142	2153	1.46×10^{-1}	1.41×10^{-4}	5.88×10^{-6}	1.78×10^{-4}	(a)	9.87×10^{-3}	6.37×10^{-3}
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(b)	(a)	(a)
TY tank farm removal	2111	2122	(a)	(a)	(a)	(a)	(b)	(a)	(a)

Table G–130. Tank Closure Alternative 6A, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2149–2150	2149–2150	2149–2150	2149–2150	2078–2140	2149–2150	2149–2150
Closure *(continued)*									
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(b)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(b)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(b)	(a)	(a)
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(b)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(b)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(b)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2042	2162	3.84×10^{-5}	4.10×10^{-8}	2.52×10^{-12}	1.44×10^{-10}	4.06×10^{-6}	3.32×10^{-7}	9.39×10^{-7}
Preprocessing Facility deactivation	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			1.05×10^{1}	4.80×10^{-3}	1.41×10^{-4}	4.50×10^{-3}	2.37×10^{-3}	3.72	1.14

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–131. Tank Closure Alternative 6A, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2113–2114	2113–2114	2074	2074	2113–2114	2113–2114	2158–2160	2158–2160	2115	2115
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2142	4.69×10^{2}	7.26×10^{1}	5.59×10^{2}	3.79×10^{-1}	1.25×10^{2}	1.26	(a)	(a)	1.15×10^{-2}	1.16×10^{-4}
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant original	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2158	2161	(a)	(a)	(a)	(a)	(a)	(a)	2.55×10^{1}	8.50	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 1	2029	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 2	2069	2074	(a)	(a)	5.38×10^{3}	4.06	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank replacement 3	2109	2114	6.45×10^{3}	1.08×10^{3}	(a)	(a)	2.19×10^{3}	2.53×10^{1}	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	4.44×10^{2}	7.11×10^{1}	1.93×10^{2}	9.51×10^{-2}	2.57	1.83×10^{-2}	6.17×10^{-2}	2.10×10^{-2}	4.28×10^{-3}	3.04×10^{-5}
Vacuum-based retrieval system	2013	2162	9.40×10^{1}	1.51×10^{1}	4.25×10^{1}	2.10×10^{-2}	5.92×10^{-1}	4.22×10^{-3}	1.35×10^{-2}	4.60×10^{-3}	9.39×10^{-4}	6.68×10^{-6}
Chemical wash system	2013	2162	9.48×10^{-1}	1.52×10^{-1}	5.06	2.50×10^{-3}	4.38×10^{-2}	3.12×10^{-4}	1.58×10^{-3}	5.37×10^{-4}	1.10×10^{-4}	7.80×10^{-7}
HLW Melter Interim Storage Facility 1	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2037	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 3	2057	2058	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 4	2077	2078	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 5	2097	2098	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 6	2117	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 7	2137	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line replacement	2064	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2067	2078	(a)	(a)	5.31×10^{3}	2.83	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 2	2127	2138	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 1	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility 2	2130	2132	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–131. Tank Closure Alternative 6A, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Carbon Monoxide 1-hour 2113–2114	Carbon Monoxide 8-hour 2113–2114	Nitrogen Dioxide 1-hour 2074	Nitrogen Dioxide Annual 2074	PM_{10} 24-hour 2113–2114	PM_{10} Annual 2113–2114	Sulfur Dioxide 1-hour 2158–2160	Sulfur Dioxide 3-hour 2158–2160	Sulfur Dioxide 24-hour 2115	Sulfur Dioxide Annual 2115
Construction *(continued)*												
IHLW Interim Storage Modules, additional	2074	2160	4.78×10^{2}	7.40×10^{1}	5.70×10^{2}	3.86×10^{-1}	1.27×10^{2}	1.28	1.74×10^{-1}	6.22×10^{-2}	1.17×10^{-2}	1.18×10^{-4}
HLW Debris Storage Facilities	2041	2110	(a)	(a)	2.54×10^{1}	1.25×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2083	2085	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 4	2113	2115	1.15×10^{4}	1.77×10^{3}	(a)	(a)	5.05×10^{2}	5.07	(a)	(a)	1.04	1.04×10^{-2}
Effluent Treatment Facility replacement 5	2143	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2040	2042	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2065	2067	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 4	2090	2092	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 5	2115	2117	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	3.23×10^{-1}	3.24×10^{-3}
Evaporator replacement 6	2140	2142	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Operations												
IHLW Interim Storage Facility	2018	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2162	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2162	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2162	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2162	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2162	3.03×10^{2}	9.32×10^{1}	5.95×10^{2}	2.85	2.39×10^{-1}	1.11×10^{-2}	1.19×10^{1}	7.32	1.22	5.70×10^{-2}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2162	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2162	2.04	3.27×10^{-1}	2.31	1.14×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2162	6.41×10^{-1}	1.03×10^{-1}	7.26×10^{-1}	3.58×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)

Table G–131. Tank Closure Alternative 6A, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter): Carbon Monoxide 1-hour 2113–2114	Carbon Monoxide 8-hour 2113–2114	Nitrogen Dioxide 1-hour 2074	Nitrogen Dioxide Annual 2074	PM_{10} 24-hour 2113–2114	PM_{10} Annual 2113–2114	Sulfur Dioxide 1-hour 2158–2160	Sulfur Dioxide 3-hour 2158–2160	Sulfur Dioxide 24-hour 2115	Sulfur Dioxide Annual 2115
Operations *(continued)*												
Chemical wash system	2013	2162	6.32×10^{-1}	1.01×10^{-1}	2.21	1.09×10^{-3}	4.60×10^{-1}	3.28×10^{-3}	6.28×10^{-4}	2.14×10^{-4}	4.36×10^{-5}	3.10×10^{-7}
HLW Melter Interim Storage Facilities	2018	2262	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2042	2153	(b)	(b)	(b)	(b)	(b)	(b)	(a)	(a)	(b)	(b)
Effluent Treatment Facility	2006	2166	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2018	2163	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2167	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Deactivation												
Mobile retrieval system	2013	2162	2.22×10^{2}	3.55×10^{1}	1.74×10^{1}	8.57×10^{-3}	1.00×10^{-1}	7.12×10^{-4}	5.30×10^{-3}	1.80×10^{-3}	3.68×10^{-4}	2.62×10^{-6}
Vacuum-based retrieval system	2013	2162	2.05	3.28×10^{-1}	1.61×10^{-1}	7.92×10^{-5}	1.01×10^{-3}	7.20×10^{-6}	4.90×10^{-5}	1.67×10^{-5}	3.40×10^{-6}	2.42×10^{-8}
Chemical wash system	2013	2162	8.75	1.40	1.54	7.62×10^{-4}	9.03×10^{-3}	6.43×10^{-5}	4.92×10^{-4}	1.67×10^{-4}	3.41×10^{-5}	2.43×10^{-7}
IHLW Interim Storage Facility	2078	2188	(b)	(b)	(a)	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant original	2079	2081	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 1	2139	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant replacement 2	2164	2166	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2164	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2086	2086	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2116	2116	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 4	2146	2146	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 5	2167	2167	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2043	2043	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 2	2068	2068	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 3	2093	2093	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–131. Tank Closure Alternative 6A, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2113–2114	2113–2114	2074	2074	2113–2114	2113–2114	2158–2160	2158–2160	2115	2115
Deactivation *(continued)*												
Evaporator replacement 4	2118	2118	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 5	2143	2143	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 6	2168	2168	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Containment structure construction 1	2038	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2061	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2084	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2107	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2122	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2138	2141	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2108	2110	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2123	2125	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2138	2140	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2162	2164	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2065	2076	(a)	(a)	1.34×10^{3}	6.63×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2111	2122	2.24×10^{2}	3.59×10^{1}	(a)	(a)	9.06	6.45×10^{-2}	(a)	(a)	2.44×10^{-2}	1.74×10^{-4}
BX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2142	2153	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2126	2137	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2111	2122	1.12×10^{2}	1.79×10^{1}	(a)	(a)	4.53	3.22×10^{-2}	(a)	(a)	1.22×10^{-2}	8.68×10^{-5}
TX tank farm removal	2088	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2065	2076	(a)	(a)	1.34×10^{3}	6.63×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)

Table G–131. Tank Closure Alternative 6A, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2113–2114	2113–2114	2074	2074	2113–2114	2113–2114	2158–2160	2158–2160	2115	2115
Closure *(continued)*												
SX tank farm removal	2042	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm deep soil removal	2138	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	8.70×10^{-3}	3.11×10^{-3}	(a)	(a)
AX tank farm deep soil removal	2154	2161	(a)	(a)	(a)	(a)	(a)	(a)	1.45×10^{-1}	5.19×10^{-2}	(a)	(a)
TX tank farm deep soil removal	2100	2107	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2077	2084	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm deep soil removal	2054	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B Area cribs and trenches (ditches) removal	2054	2084	(a)	(a)	4.08×10^{3}	2.01	(a)	(a)	(a)	(a)	(a)	(a)
T Area cribs and trenches (ditches) removal	2100	2145	5.92×10^{2}	9.49×10^{1}	(a)	(a)	2.02×10^{1}	1.44×10^{-1}	(a)	(a)	6.48×10^{-2}	4.61×10^{-4}
B and T Area cribs and trenches (ditches) construction 1	2050	2053	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) construction 2	2096	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 1	2085	2087	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B and T Area cribs and trenches (ditches) deactivation 2	2146	2148	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2039	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2042	2162	3.65	7.81×10^{-1}	9.84	1.60×10^{-2}	7.70×10^{-2}	1.44×10^{-3}	2.23	7.77×10^{-1}	1.94×10^{-1}	3.62×10^{-3}
Preprocessing Facility deactivation	2163	2163	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			2.61×10^{4}	4.18×10^{3}	**2.70×10^{4}**	1.58×10^{1}	**3.88×10^{3}**	3.91×10^{1}	4.74×10^{1}	1.93×10^{1}	3.35	7.67×10^{-2}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–132. Tank Closure Alternative 6A, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2015–2016	Benzene Annual 2041	1,3-Butadiene Annual 2054–2055	Formaldehyde Annual 2054–2055	Mercury 24-hour 2079–2141	Toluene 24-hour 2158–2161	Xylene 24-hour 2158–2161
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2142	(a)	(a)	(a)	(a)	(a)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant original	2006	2017	5.01×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2158	2161	(b)	(b)	(b)	(b)	(b)	2.10	5.97×10^{-1}
Tank risers	2013	2016	2.68	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank replacement 1	2029	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank replacement 2	2069	2074	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank replacement 3	2109	2114	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2162	1.23×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	3.85×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	1.61×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 1	2017	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 2	2037	2038	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 3	2057	2058	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 4	2077	2078	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 5	2097	2098	(b)	(b)	(b)	(b)	(a)	(b)	(b)
HLW Melter Interim Storage Facility 6	2117	2118	(b)	(b)	(b)	(b)	(a)	(b)	(b)
HLW Melter Interim Storage Facility 7	2137	2138	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Underground transfer line replacement	2064	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant replacement 1	2067	2078	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant replacement 2	2127	2138	(b)	(b)	(b)	(b)	(a)	(b)	(b)
IHLW Shipping/Transfer Facility 1	2070	2072	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility 2	2130	2132	(b)	(b)	(b)	(b)	(a)	(b)	(b)
IHLW Interim Storage Modules, additional	2074	2160	(b)	(b)	(b)	(b)	(a)	(b)	(b)

Table G–132. Tank Closure Alternative 6A, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2015–2016	2041	2054–2055	2054–2055	2079–2141	2158–2161	2158–2161
Construction *(continued)*									
HLW Debris Storage Facilities	2041	2110	(b)	2.65×10^{-6}	1.11×10^{-7}	3.35×10^{-6}	(a)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 2	2053	2055	(b)	(b)	1.36×10^{-5}	5.75×10^{-4}	(b)	(b)	(b)
Effluent Treatment Facility replacement 3	2083	2085	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 4	2113	2115	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 5	2143	2145	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 2	2040	2042	(b)	3.63×10^{-4}	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 3	2065	2067	(b)	(a)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 4	2090	2092	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 5	2115	2117	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 6	2140	2142	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
IHLW Interim Storage Facility	2018	2163	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Routine operations	2006	2162	5.59	(a)	(a)	(a)	(a)	(a)	(a)
Retrieval operations	2006	2162	4.60×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Double-shell tank interim stabilization	2006	2162	3.02×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2018	2162	(b)	1.38×10^{-4}	4.98×10^{-8}	1.54×10^{-6}	1.45×10^{-3}	8.37×10^{-5}	2.82×10^{-4}
Waste Treatment Plant, cesium and strontium capsules	2163	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2162	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2162	1.23×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	3.85×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	1.61×10^{-3}	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2262	(b)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–132. Tank Closure Alternative 6A, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2015–2016	2041	2054–2055	2054–2055	2079–2141	2158–2161	2158–2161
Operations *(continued)*									
HLW Debris Storage Facilities	2042	2153	(b)	(b)	(a)	(a)	(a)	(b)	(b)
Effluent Treatment Facility	2006	2166	3.72×10^{-4}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2018	2163	(b)	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(a)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2167	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Deactivation									
Mobile retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Chemical wash system	2013	2162	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Facility	2078	2188	(b)	(b)	(b)	(b)	(a)	(a)	(a)
Waste Treatment Plant original	2079	2081	(b)	(b)	(b)	(b)	9.11×10^{-4}	(b)	(b)
Waste Treatment Plant replacement 1	2139	2141	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Waste Treatment Plant replacement 2	2164	2166	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2164	2164	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2056	2056	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 2	2086	2086	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 3	2116	2116	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Effluent Treatment Facility replacement 4	2146	2146	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 5	2167	2167	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2154	2154	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2043	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 2	2068	2068	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 3	2093	2093	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 4	2118	2118	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator replacement 5	2143	2143	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 6	2168	2168	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–132. Tank Closure Alternative 6A, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2015–2016	Benzene Annual 2041	1,3-Butadiene Annual 2054–2055	Formaldehyde Annual 2054–2055	Mercury 24-hour 2079–2141	Toluene 24-hour 2158–2161	Xylene 24-hour 2158–2161
Closure									
Containment structure construction 1	2038	2041	(b)	(a)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 2	2061	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 3	2084	2087	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction 4	2107	2110	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction 5	2122	2125	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction 6	2138	2141	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 1	2062	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 2	2085	2087	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 3	2108	2110	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 4	2123	2125	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 5	2146	2148	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 6	2138	2140	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 7	2162	2164	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm removal	2065	2076	(b)	(b)	(b)	(b)	(b)	(b)	(b)
T tank farm removal	2126	2137	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BY tank farm removal	2111	2122	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BX tank farm removal	2042	2053	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C tank farm removal	2088	2099	(b)	(b)	(b)	(b)	(a)	(b)	(b)
A tank farm removal	2142	2153	(b)	(b)	(b)	(b)	(b)	(b)	(b)
AX tank farm removal	2142	2153	(b)	(b)	(b)	(b)	(b)	(b)	(b)
S tank farm removal	2126	2137	(b)	(b)	(b)	(b)	(a)	(b)	(b)
TY tank farm removal	2111	2122	(b)	(b)	(b)	(b)	(a)	(b)	(b)
TX tank farm removal	2088	2099	(b)	(b)	(b)	(b)	(a)	(b)	(b)
U tank farm removal	2065	2076	(b)	(b)	(b)	(b)	(b)	(b)	(b)
SX tank farm removal	2042	2053	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm deep soil removal	2077	2084	(b)	(b)	(b)	(b)	(a)	(b)	(b)

Table G–132. Tank Closure Alternative 6A, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2015–2016	2041	2054–2055	2054–2055	2079–2141	2158–2161	2158–2161
Closure *(continued)*									
T tank farm deep soil removal	2138	2145	(b)	(b)	(b)	(b)	(a)	(b)	(b)
BX tank farm deep soil removal	2054	2061	(b)	(b)	2.70×10^{-5}	8.16×10^{-4}	(b)	(b)	(b)
C tank farm deep soil removal	2100	2107	(b)	(b)	(b)	(b)	(a)	(b)	(b)
A tank farm deep soil removal	2154	2161	(b)	(b)	(b)	(b)	(b)	1.60×10^{-4}	1.12×10^{-4}
AX tank farm deep soil removal	2154	2161	(b)	(b)	(b)	(b)	(b)	2.67×10^{-3}	1.86×10^{-3}
TX tank farm deep soil removal	2100	2107	(b)	(b)	(b)	(b)	(a)	(b)	(b)
U tank farm deep soil removal	2077	2084	(b)	(b)	(b)	(b)	(a)	(b)	(b)
SX tank farm deep soil removal	2054	2061	(b)	(b)	1.03×10^{-5}	3.11×10^{-4}	(b)	(b)	(b)
B Area cribs and trenches (ditches) removal	2054	2084	(b)	(b)	1.78×10^{-5}	5.38×10^{-4}	(a)	(b)	(b)
T Area cribs and trenches (ditches) removal	2100	2145	(b)	(b)	(b)	(b)	(a)	(b)	(b)
B & T Area cribs and trenches (ditches) construction 1	2050	2053	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B & T Area cribs and trenches (ditches) construction 2	2096	2099	(b)	(b)	(b)	(b)	(a)	(b)	(b)
B & T Area cribs and trenches (ditches) deactivation 1	2085	2087	(b)	(b)	(b)	(b)	(a)	(b)	(b)
B & T Area cribs and trenches (ditches) deactivation 2	2146	2148	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility construction	2039	2041	(b)	2.18×10^{-3}	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility operations	2042	2162	(b)	(b)	8.86×10^{-12}	5.06×10^{-10}	(a)	1.17×10^{-6}	3.30×10^{-6}
Preprocessing Facility deactivation	2163	2163	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.02×10^{1}	3.11×10^{-3}	8.42×10^{-5}	2.72×10^{-3}	2.36×10^{-3}	2.56	7.47×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–133. Tank Closure Alternative 6B, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2101	2101	2101	2101	2040	2040	2040	2040
Construction												
Canister Storage Building	2006	2016	4.37×10^{1}	6.76	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	3.01×10^{2}	4.66×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	1.80×10^{1}	2.88	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	5.67×10^{3}	9.09×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.72×10^{4}	2.42×10^{3}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility expansion	2008	2017	1.46×10^{3}	2.26×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste receiver facilities	2013	2017	1.87×10^{3}	2.99×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	3.26×10^{2}	5.23×10^{1}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	1.41×10^{3}	2.26×10^{2}	(a)	(a)	(a)	(a)	1.96×10^{-1}	6.67×10^{-2}	1.36×10^{-2}	9.68×10^{-5}
Vacuum-based retrieval system	2013	2043	5.26×10^{2}	8.43×10^{1}	(a)	(a)	(a)	(a)	7.57×10^{-2}	2.57×10^{-2}	5.25×10^{-3}	3.74×10^{-5}
Chemical wash system	2013	2043	3.56	5.71×10^{-1}	(a)	(a)	(a)	(a)	5.94×10^{-3}	2.02×10^{-3}	4.12×10^{-4}	2.93×10^{-6}
HLW Melter Interim Storage Facility 1	2015	2016	1.39×10^{1}	1.96	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2083	2085	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	3.56×10^{3}	5.50×10^{2}	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facility	2016	2043	2.29×10^{1}	3.22	(a)	(a)	(a)	(a)	3.49×10^{-2}	1.16×10^{-2}	2.00×10^{-3}	1.86×10^{-5}
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	(a)	(a)	(a)	8.63×10^{-3}	2.93×10^{-3}	5.98×10^{-4}	4.26×10^{-6}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–133. Tank Closure Alternative 6B, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2101	2101	2101	2101	2040	2040	2040	2040
Operations												
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(b)	(b)	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Routine operations	2006	2043	5.72×10^{1}	1.50×10^{1}	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2043	7.66×10^{-1}	1.23×10^{-1}	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2043	5.02	8.05×10^{-1}	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	(a)	(a)	(a)	(a)	(a)	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	(a)	(a)	(a)	(a)	(a)	5.14×10^{-1}	1.76×10^{-1}	4.70×10^{-2}	7.71×10^{-4}
Mobile retrieval system	2013	2043	6.48	1.04	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2043	3.58	5.74×10^{-1}	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2043	2.38	3.81×10^{-1}	(a)	(a)	(a)	(a)	2.36×10^{-3}	8.02×10^{-4}	1.64×10^{-4}	1.16×10^{-6}
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2100	7.85	2.41	(a)	(a)	(a)	(a)	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2043	2.00×10^{2}	3.09×10^{1}	(a)	(a)	(a)	(a)	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2102	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(a)	(a)	(a)	(b)	(b)	(b)	(b)
Deactivation												
Mobile retrieval system	2013	2043	7.04×10^{2}	1.13×10^{2}	(a)	(a)	(a)	(a)	1.69×10^{-2}	5.73×10^{-3}	1.17×10^{-3}	8.32×10^{-6}
Vacuum-based retrieval system	2013	2043	1.15×10^{1}	1.84	(a)	(a)	(a)	(a)	2.74×10^{-4}	9.32×10^{-5}	1.90×10^{-5}	1.35×10^{-7}
Chemical wash system	2013	2043	3.29×10^{1}	5.27	(a)	(a)	(a)	(a)	1.85×10^{-3}	6.28×10^{-4}	1.28×10^{-4}	9.12×10^{-7}
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–133. Tank Closure Alternative 6B, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2101	2101	2101	2101	2040	2040	2040	2040
Deactivation *(continued)*												
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2086	2086	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2101	2101	(a)	(a)	1.08×10^{3}	5.75×10^{-1}	6.06×10^{2}	5.65	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 4	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 5	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 6	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2089	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 6	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 7	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	(a)	(a)	2.56×10^{4}	1.26×10^{1}	4.11×10^{3}	2.92×10^{1}	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–133. Tank Closure Alternative 6B, Base Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2101	2101	2101	2101	2040	2040	2040	2040
Closure *(continued)*												
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	4.78×10^{-2}	1.71×10^{-2}	3.23×10^{-3}	3.24×10^{-5}
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	1.53	5.48×10^{-1}	1.03×10^{-1}	1.04×10^{-3}
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	4.92×10^{-1}	1.67×10^{-1}	3.42×10^{-2}	2.43×10^{-4}
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	(a)	(a)	(a)	8.92×10^{-1}	3.43×10^{-1}	6.98×10^{-2}	4.94×10^{-4}
Preprocessing Facility construction	2020	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2023	2099	(a)	(a)	(a)	(a)	(a)	(a)	1.83×10^{-1}	6.39×10^{-2}	1.59×10^{-2}	2.98×10^{-4}
Preprocessing Facility deactivation	2100	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2102	2201	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			3.85×10^{4}	5.77×10^{3}	$\mathbf{3.32\times10^{4}}$	1.42×10^{1}	$\mathbf{5.51\times10^{3}}$	3.70×10^{1}	7.15×10^{1}	4.09×10^{1}	6.91	2.92×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–134. Tank Closure Alternative 6B, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2101	2101	2101	2044–2045	2101	2101
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules, three additional	2014	2024	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Low-Activity Waste Vitrification Facility	2008	2017	3.76×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.68	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2043	3.90×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2043	2.15×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2043	6.05×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 2	2029	2030	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 2	2053	2055	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 3	2083	2085	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	9.56×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2021	2090	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–134. Tank Closure Alternative 6B, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2101	2101	2101	2044–2045	2101	2101
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2043	5.59	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2043	4.60×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2043	3.02×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2043	3.90×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2043	2.15×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2043	6.05×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2199	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2100	1.18×10^{-1}	(b)	(b)	(b)	(a)	(b)	(b)
Evaporator	2006	2043	9.82×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Borrow Area C	2006	2102	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2023	2088	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Deactivation									
Mobile retrieval system	2013	2043	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2043	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2043	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2044	2045	(b)	(b)	(b)	(b)	1.17×10^{-1}	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2056	2056	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–134. Tank Closure Alternative 6B, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2101	2101	2101	2044–2045	2101	2101
Deactivation *(continued)*									
Effluent Treatment Facility replacement 2	2086	2086	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 3	2101	2101	(b)	2.68×10^{-4}	5.68×10^{-6}	1.97×10^{-4}	(b)	2.57×10^{-1}	7.48×10^{-2}
HLW Debris Storage Facilities	2089	2089	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Closure									
Containment structure construction 1	2019	2022	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 2	2019	2022	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 3	2046	2049	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 4	2046	2049	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 5	2073	2076	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 6	2073	2076	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 1	2043	2045	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 2	2043	2045	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 3	2070	2072	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 4	2062	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 5	2089	2091	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 6	2097	2099	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 7	2097	2099	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2100	2101	(b)	4.04×10^{-3}	1.17×10^{-4}	3.78×10^{-3}	(b)	3.25	9.84×10^{-1}
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
T tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BY tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–134. Tank Closure Alternative 6B, Base Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2016	Benzene Annual 2101	1,3-Butadiene Annual 2101	Formaldehyde Annual 2101	Mercury 24-hour 2044–2045	Toluene 24-hour 2101	Xylene 24-hour 2101
Closure *(continued)*									
C tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
A tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
AX tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
S tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TY tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TX tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
U tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
SX tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm deep soil removal	2035	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)
T tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX tank farm deep soil removal	2035	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C tank farm deep soil removal	2062	2069	(b)	(b)	(b)	(b)	(b)	(b)	(b)
A tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
AX tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TX tank farm deep soil removal	2062	2069	(b)	(b)	(b)	(b)	(b)	(b)	(b)
U tank farm deep soil removal	2035	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)
SX tank farm deep soil removal	2035	2042	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility construction	2020	2022	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility operations	2023	2099	(b)	(b)	(b)	(b)	6.38×10^{-6}	(b)	(b)
Preprocessing Facility deactivation	2100	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care	2102	2201	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.22×10^{1}	4.60×10^{-3}	1.33×10^{-4}	4.28×10^{-3}	$\mathbf{1.17\times10^{-1}}$	3.96	1.20

a Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding acceptable source impact level are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–135. Tank Closure Alternative 6B, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2016	2040	2016	2016	2040	2040	2040	2040
Construction												
Canister Storage Building	2006	2016	4.37×10^{1}	6.76	1.01×10^{1}	(a)	4.82×10^{-1}	4.84×10^{-3}	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules, three additional	2014	2024	3.01×10^{2}	4.66×10^{1}	3.59×10^{2}	(a)	8.02×10^{1}	8.05×10^{-1}	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	1.80×10^{1}	2.88	1.31×10^{1}	(a)	1.27	9.07×10^{-3}	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	5.67×10^{3}	9.09×10^{2}	7.16×10^{2}	(a)	9.09	6.47×10^{-2}	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	1.72×10^{4}	2.42×10^{3}	1.40×10^{4}	(a)	5.35×10^{2}	5.00	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility	2008	2017	1.46×10^{3}	2.26×10^{2}	3.23×10^{2}	(a)	8.77×10^{1}	8.80×10^{-1}	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste receiver facilities	2013	2017	1.87×10^{3}	2.99×10^{2}	1.57×10^{3}	(a)	3.73×10^{2}	2.65	(a)	(a)	(a)	(a)
Tank risers	2013	2016	3.26×10^{2}	5.23×10^{1}	1.45×10^{2}	(a)	9.12×10^{-1}	6.49×10^{-3}	(a)	(a)	(a)	(a)
Mobile retrieval system	2013	2043	1.41×10^{3}	2.26×10^{2}	6.13×10^{2}	3.02×10^{-1}	8.16	5.81×10^{-2}	1.96×10^{-1}	6.67×10^{-2}	1.36×10^{-2}	9.68×10^{-5}
Vacuum-based retrieval system	2013	2043	5.26×10^{2}	8.43×10^{1}	2.38×10^{2}	1.17×10^{-1}	3.31	2.36×10^{-2}	7.57×10^{-2}	2.57×10^{-2}	5.25×10^{-3}	3.74×10^{-5}
Chemical wash system	2013	2043	3.56	5.71×10^{-1}	1.90×10^{1}	9.38×10^{-3}	1.65×10^{-1}	1.17×10^{-3}	5.94×10^{-3}	2.02×10^{-3}	4.12×10^{-4}	2.93×10^{-6}
HLW Melter Interim Storage Facility 1	2015	2016	1.39×10^{1}	1.96	3.13×10^{1}	(a)	2.22×10^{1}	2.07×10^{-1}	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2053	2055	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 3	2083	2085	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	3.56×10^{3}	5.50×10^{2}	5.15×10^{2}	(a)	9.34	9.38×10^{-2}	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	2.29×10^{1}	3.22	1.06×10^{2}	5.68×10^{-2}	5.56×10^{1}	5.19×10^{-1}	3.49×10^{-2}	1.16×10^{-2}	2.00×10^{-3}	1.86×10^{-5}
HLW Debris Storage Facilities	2021	2090	(a)	(a)	(a)	1.25×10^{-2}	(a)	(a)	8.63×10^{-3}	2.93×10^{-3}	5.98×10^{-4}	4.26×10^{-6}
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–135. Tank Closure Alternative 6B, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour 2016	8-hour 2016	1-hour 2016	Annual 2040	24-hour 2016	Annual 2016	1-hour 2040	3-hour 2040	24-hour 2040	Annual 2040
Operations												
IHLW Interim Storage Facility	2018	2040	(a)	(a)	(a)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2043	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2043	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2043	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2043	(a)	(a)	(a)	2.80	(a)	(a)	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(a)	(a)	(a)	2.80	(a)	(a)	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Cesium and Strontium Capsule Processing Facility	2039	2040	(a)	(a)	(a)	1.53×10^{-2}	(a)	(a)	5.14×10^{-1}	1.76×10^{-1}	4.70×10^{-2}	7.71×10^{-4}
Mobile retrieval system	2013	2043	6.48	1.04	7.35	3.63×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2013	2043	3.58	5.74×10^{-1}	4.06	2.00×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Chemical wash system	2013	2043	2.38	3.81×10^{-1}	8.31	4.10×10^{-3}	1.73	1.23×10^{-2}	2.36×10^{-3}	8.02×10^{-4}	1.64×10^{-4}	1.16×10^{-6}
HLW Melter Interim Storage Facilities	2018	2199	(a)	(a)	(a)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2100	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2043	1.96×10^{2}	3.03×10^{1}	9.09×10^{2}	6.16×10^{-1}	1.86×10^{1}	1.87×10^{-1}	3.09×10^{-1}	1.11×10^{-1}	2.09×10^{-2}	2.09×10^{-4}
Borrow Area C	2006	2102	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(a)	(a)	(a)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2023	2088	(a)	(a)	(a)	(b)	(a)	(a)	(b)	(b)	(b)	(b)
Deactivation												
Mobile retrieval system	2013	2043	7.04×10^{2}	1.13×10^{2}	5.52×10^{1}	2.72×10^{-2}	3.18×10^{-1}	2.27×10^{-3}	1.69×10^{-2}	5.73×10^{-3}	1.17×10^{-3}	8.32×10^{-6}
Vacuum-based retrieval system	2013	2043	1.15×10^{1}	1.84	8.98×10^{-1}	4.43×10^{-4}	5.66×10^{-3}	4.03×10^{-5}	2.74×10^{-4}	9.32×10^{-5}	1.90×10^{-5}	1.35×10^{-7}
Chemical wash system	2013	2043	3.29×10^{1}	5.27	5.80	2.86×10^{-3}	3.39×10^{-2}	2.41×10^{-4}	1.85×10^{-3}	6.28×10^{-4}	1.28×10^{-4}	9.12×10^{-7}
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2056	2056	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 2	2086	2086	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–135. Tank Closure Alternative 6B, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2016	2040	2016	2016	2040	2040	2040	2040
Deactivation *(continued)*												
Effluent Treatment Facility replacement 3	2101	2101	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Containment structure construction 1	2019	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2046	2049	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 3	2073	2076	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2043	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2070	2072	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 3	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 4	2089	2091	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 5	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
B tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
T tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
C tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
S tank farm removal	2077	2088	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TY tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm removal	2050	2061	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
SX tank farm removal	2023	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)

Table G–135. Tank Closure Alternative 6B, Option Case, Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2016	2016	2016	2040	2016	2016	2040	2040	2040	2040
Closure *(continued)*												
B tank farm deep soil removal	2035	2042	(a)	(a)	(a)	9.52×10^{-2}	(a)	(a)	4.78×10^{-2}	1.71×10^{-2}	3.23×10^{-3}	3.24×10^{-5}
T tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	3.05	(a)	(a)	1.53	5.48×10^{-1}	1.03×10^{-1}	1.04×10^{-3}
C tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
A tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
AX tank farm deep soil removal	2089	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
TX tank farm deep soil removal	2062	2069	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
U tank farm deep soil removal	2035	2042	(a)	(a)	(a)	7.15×10^{-1}	(a)	(a)	4.92×10^{-1}	1.67×10^{-1}	3.42×10^{-2}	2.43×10^{-4}
SX tank farm deep soil removal	2035	2042	(a)	(a)	(a)	1.45	(a)	(a)	8.92×10^{-1}	3.43×10^{-1}	6.98×10^{-2}	4.94×10^{-4}
B Area cribs and trenches (ditches) removal	2035	2061	(a)	(a)	(a)	2.31	(a)	(a)	1.59	5.41×10^{-1}	1.10×10^{-1}	7.86×10^{-4}
T Area cribs and trenches (ditches) removal	2062	2096	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 1	2029	2032	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction 2	2056	2059	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 1	2062	2064	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation 2	2097	2099	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility construction	2020	2022	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Preprocessing Facility operations	2023	2099	(a)	(a)	(a)	2.52×10^{-2}	(a)	(a)	3.50	1.22	3.04×10^{-1}	5.69×10^{-3}
Preprocessing Facility deactivation	2100	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			3.85×10^{4}	5.77×10^{3}	**2.62×10^{4}**	1.56×10^{1}	**2.08×10^{3}**	1.62×10^{1}	7.64×10^{1}	4.26×10^{1}	7.31	2.98×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–136. Tank Closure Alternative 6B, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2044–2045	2016–2017	2016–2017
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(a)	(a)
IHLW Shipping/Transfer Facility and one IHLW Interim Storage Module	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules, three additional	2014	2024	(a)	(b)	(b)	(b)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(a)	(a)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(a)	(a)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	1.69	5.06×10^{-1}
Low-Activity Waste Vitrification Facility	2008	2017	3.76×10^{-2}	(b)	(b)	(b)	(b)	1.88×10^{-1}	5.39×10^{-2}
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	1.52×10^{-3}	1.79×10^{-5}	7.52×10^{-4}	(b)	(b)	(b)
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(a)	(a)
Tank risers	2013	2016	2.68	(b)	(b)	(b)	(b)	(a)	(a)
Mobile retrieval system	2013	2043	3.90×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Vacuum-based retrieval system	2013	2043	2.15×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Chemical wash system	2013	2043	6.05×10^{-3}	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(b)	(b)	(b)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 2	2053	2055	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 3	2083	2085	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	6.32×10^{-2}	(b)	(b)	(b)	(b)	4.65×10^{-1}	1.32×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	9.56×10^{-3}	1.26×10^{-5}	(a)	(a)	(b)	5.64×10^{-4}	3.93×10^{-4}
HLW Debris Storage Facilities	2021	2090	(b)	2.65×10^{-6}	1.11×10^{-7}	3.35×10^{-6}	(a)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–136. Tank Closure Alternative 6B, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2035–2038	2035–2038	2035–2038	2044–2045	2016–2017	2016–2017
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Routine operations	2006	2043	5.59	(a)	(a)	(a)	(b)	(a)	(a)
Retrieval operations	2006	2043	4.60×10^{-2}	(a)	(a)	(a)	(b)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	3.02×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant	2018	2043	(b)	1.19×10^{-4}	4.31×10^{-8}	1.33×10^{-6}	(b)	(b)	(b)
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mobile retrieval system	2013	2043	3.90×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Vacuum-based retrieval system	2013	2043	2.15×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Chemical wash system	2013	2043	6.05×10^{-3}	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2199	(b)	(a)	(a)	(a)	(a)	(b)	(b)
Effluent Treatment Facility	2006	2100	1.18×10^{-1}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2043	9.64×10^{-2}	1.30×10^{-4}	5.46×10^{-6}	1.65×10^{-4}	(b)	5.69×10^{-3}	3.96×10^{-3}
Borrow Area C	2006	2102	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(b)	(a)	(a)	(a)	(b)	(b)	(b)
HLW Debris Storage Facilities	2023	2088	(b)	(a)	(a)	(a)	(a)	(b)	(b)
Deactivation									
Mobile retrieval system	2013	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Vacuum-based retrieval system	2013	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Chemical wash system	2013	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2044	2045	(b)	(b)	(b)	(b)	1.17×10^{-1}	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2056	2056	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 2	2086	2086	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–136. Tank Closure Alternative 6B, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2016	Benzene Annual 2035–2038	1,3-Butadiene Annual 2035–2038	Formaldehyde Annual 2035–2038	Mercury 24-hour 2044–2045	Toluene 24-hour 2016–2017	Xylene 24-hour 2016–2017
Deactivation *(continued)*									
Effluent Treatment Facility replacement 3	2101	2101	(b)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Debris Storage Facilities	2089	2089	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Closure									
Containment structure construction 1	2019	2022	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 2	2046	2049	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 3	2073	2076	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 1	2043	2045	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure deactivation 2	2070	2072	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 3	2062	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 4	2089	2091	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 5	2097	2099	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
T tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BY tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
C tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
A tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
AX tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
S tank farm removal	2077	2088	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TY tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TX tank farm removal	2050	2061	(b)	(b)	(b)	(b)	(b)	(b)	(b)
U tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
SX tank farm removal	2023	2034	(b)	(b)	(b)	(b)	(b)	(b)	(b)
B tank farm deep soil removal	2035	2042	(b)	2.02×10^{-5}	8.44×10^{-7}	2.55×10^{-5}	(b)	(b)	(b)

Table G–136. Tank Closure Alternative 6B, Option Case, Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Ammonia 24-hour 2016	Benzene Annual 2035–2038	1,3-Butadiene Annual 2035–2038	Formaldehyde Annual 2035–2038	Mercury 24-hour 2044–2045	Toluene 24-hour 2016–2017	Xylene 24-hour 2016–2017
			Concentration (micrograms per cubic meter)						
Closure *(continued)*									
T tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX tank farm deep soil removal	2035	2042	(b)	6.45×10^{-4}	2.70×10^{-5}	8.16×10^{-4}	(b)	(b)	(b)
C tank farm deep soil removal	2062	2069	(b)	(b)	(b)	(b)	(b)	(b)	(b)
A tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
AX tank farm deep soil removal	2089	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
TX tank farm deep soil removal	2062	2069	(b)	(b)	(b)	(b)	(b)	(b)	(b)
U tank farm deep soil removal	2035	2042	(b)	1.51×10^{-4}	6.34×10^{-6}	1.91×10^{-4}	(b)	(b)	(b)
SX tank farm deep soil removal	2035	2042	(b)	3.08×10^{-4}	1.29×10^{-5}	3.89×10^{-4}	(b)	(b)	(b)
B Area cribs and trenches (ditches) removal	2035	2061	(b)	4.89×10^{-4}	2.05×10^{-5}	6.18×10^{-4}	(a)	(b)	(b)
T Area cribs and trenches (ditches) removal	2062	2096	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 1	2029	2032	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure construction 2	2056	2059	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 1	2062	2064	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation 2	2097	2099	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility construction	2020	2022	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Preprocessing Facility operations	2023	2099	(b)	2.27×10^{-7}	1.39×10^{-11}	7.96×10^{-10}	(a)	(b)	(b)
Preprocessing Facility deactivation	2100	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.22×10^{1}	3.70×10^{-3}	1.01×10^{-4}	3.27×10^{-3}	$\mathbf{1.17\times10^{-1}}$	2.80	8.40×10^{-1}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
Note: Total concentrations exceeding acceptable source impact level are presented in **bold**.
Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.
Source: SAIC 2010a.

Table G–137. Tank Closure Alternative 6C Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2040	2040	2040	2040	2040	2040	2040	2040	2040	2040
Construction												
Canister Storage Building	2006	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Shipping/Transfer Facility	2011	2013	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
IHLW Interim Storage Modules	2014	2024	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Other infrastructure upgrades	2006	2034	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank upgrades	2006	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2006	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Underground transfer line 1,000-foot sections	2009	2009	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Low-Activity Waste Vitrification Facility	2008	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2035	2038	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste receiver facilities	2013	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank risers	2013	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	1.09×10^{3}	1.74×10^{2}	4.19×10^{1}	2.07×10^{-2}	1.61	1.14×10^{-2}	1.00×10^{-2}	3.42×10^{-3}	6.97×10^{-4}	4.96×10^{-6}
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	1.09×10^{3}	1.74×10^{2}	4.91×10^{2}	2.42×10^{-1}	6.85	4.87×10^{-2}	1.56×10^{-1}	5.32×10^{-2}	1.08×10^{-2}	7.72×10^{-5}
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
HLW Melter Interim Storage Facility 2	2029	2030	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2023	2025	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2015	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	2.29×10^{1}	3.22	1.06×10^{2}	5.68×10^{-2}	5.56×10^{1}	5.19×10^{-1}	3.49×10^{-2}	1.16×10^{-2}	2.00×10^{-3}	1.86×10^{-5}

Table G–137. Tank Closure Alternative 6C Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2040	2040	2040	2040	2040	2040	2040	2040	2040	2040
Operations												
IHLW Interim Storage Facility	2018	2040	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Routine operations	2006	2043	5.72×10^{1}	1.50×10^{1}	6.52×10^{1}	8.27×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Retrieval operations	2006	2043	7.66×10^{-1}	1.23×10^{-1}	8.68×10^{-1}	4.28×10^{-4}	(b)	(b)	(b)	(b)	(b)	(b)
Double-shell tank interim stabilization	2006	2043	5.02	8.05×10^{-1}	5.69	2.81×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2018	2043	2.64×10^{2}	8.11×10^{1}	5.86×10^{2}	2.80	1.04	4.86×10^{-2}	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Waste Treatment Plant, cesium and strontium capsules	2040	2040	2.64×10^{2}	8.11×10^{1}	5.86×10^{2}	2.80	1.04	4.86×10^{-2}	3.01×10^{1}	1.85×10^{1}	3.09	1.44×10^{-1}
Cesium and Strontium Capsule Processing Facility	2039	2040	3.84×10^{2}	6.26×10^{1}	1.02×10^{1}	1.53×10^{-2}	4.00×10^{1}	6.56×10^{-1}	5.14×10^{-1}	1.76×10^{-1}	4.70×10^{-2}	7.71×10^{-4}
Modified sluicing retrieval system	2013	2043	3.01×10^{2}	4.83×10^{1}	1.87×10^{1}	9.24×10^{-3}	9.98×10^{-2}	7.10×10^{-4}	4.80×10^{-3}	1.63×10^{-3}	3.33×10^{-4}	2.37×10^{-6}
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	7.41	1.19	8.39	4.14×10^{-3}	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facilities	2018	2145	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility	2006	2045	7.85	2.41	2.13	1.02×10^{-2}	7.66×10^{1}	3.57	1.06×10^{-2}	6.52×10^{-3}	1.09×10^{-3}	5.08×10^{-5}
Evaporator	2006	2043	2.00×10^{2}	3.09×10^{1}	9.26×10^{2}	6.27×10^{-1}	1.87×10^{1}	1.88×10^{-1}	3.15×10^{-1}	1.13×10^{-1}	2.13×10^{-2}	2.13×10^{-4}
Borrow Area C	2006	2052	4.99×10^{3}	7.67×10^{2}	6.54×10^{3}	1.04	7.93×10^{2}	2.15	7.02	2.44	4.14×10^{-1}	1.12×10^{-3}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–137. Tank Closure Alternative 6C Maximum Criteria Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2040	2040	2040	2040	2040	2040	2040	2040	2040	2040
Deactivation												
IHLW Interim Storage Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Waste Treatment Plant	2044	2045	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Cesium and Strontium Capsule Processing Facility	2041	2041	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility original	2026	2026	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility replacement 1	2046	2046	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator original	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Evaporator replacement 1	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Modified sluicing retrieval system	2013	2043	7.73×10^{2}	1.24×10^{2}	3.26×10^{1}	1.61×10^{-2}	2.00×10^{-1}	1.42×10^{-3}	9.60×10^{-3}	3.26×10^{-3}	6.66×10^{-4}	4.74×10^{-6}
Mobile retrieval system	2013	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Vacuum-based retrieval system	2029	2043	2.37×10^{1}	3.79	1.86	9.16×10^{-4}	1.17×10^{-2}	8.32×10^{-5}	5.66×10^{-4}	1.93×10^{-4}	3.93×10^{-5}	2.80×10^{-7}
Closure												
Ancillary equipment grouting	2013	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Ancillary equipment removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility construction	2032	2033	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Tank-filling grout facility operations	2034	2043	3.66×10^{2}	5.86×10^{1}	1.35×10^{3}	6.66×10^{-1}	5.08×10^{1}	3.62×10^{-1}	4.39×10^{-1}	1.49×10^{-1}	3.04×10^{-2}	2.17×10^{-4}
Tank-filling grout facility deactivation	2044	2044	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure construction	2028	2031	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
BX and SX tank farm soil removal	2032	2037	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Containment structure deactivation	2038	2040	1.47×10^{3}	2.35×10^{2}	1.52×10^{2}	7.53×10^{-2}	3.48	2.48×10^{-2}	4.74×10^{-2}	1.61×10^{-2}	3.29×10^{-3}	2.34×10^{-5}
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	2.66×10^{4}	4.26×10^{3}	2.43×10^{4}	1.20×10^{1}	3.91×10^{3}	2.78×10^{1}	3.68×10^{1}	1.25×10^{1}	2.55	1.82×10^{-2}
Postclosure care	2046	2145	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			3.79×10^{4}	6.12×10^{3}	$\mathbf{3.53 \times 10^{4}}$	2.05×10^{1}	$\mathbf{4.96 \times 10^{3}}$	3.55×10^{1}	1.05×10^{2}	5.24×10^{1}	9.26	3.08×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010a.

Table G–138. Tank Closure Alternative 6C Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2040	2040	2040	2044–2045	2040	2040
Construction									
Canister Storage Building	2006	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Shipping/Transfer Facility	2011	2013	(b)	(b)	(b)	(b)	(b)	(b)	(b)
IHLW Interim Storage Modules	2014	2024	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Other infrastructure upgrades	2006	2034	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank upgrades	2006	2025	8.81×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2006	2017	1.29	(b)	(b)	(b)	(b)	(b)	(b)
Underground transfer line 1,000-foot sections	2009	2009	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Low-Activity Waste Vitrification Facility	2008	2017	3.76×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2035	2038	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste receiver facilities	2013	2017	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Tank risers	2013	2016	2.46	(b)	(b)	(b)	(b)	(b)	(b)
Modified sluicing retrieval system	2013	2043	2.44×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	2.81×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facility 1	2015	2016	(a)	(b)	(b)	(b)	(b)	(b)	(b)
HLW Melter Interim Storage Facility 2	2029	2030	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2023	2025	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2015	2017	1.49×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Immobilized Low-Activity Waste Interim Storage Facilities	2016	2043	9.56×10^{-3}	1.20×10^{-5}	(a)	(a)	(b)	5.64×10^{-4}	3.93×10^{-4}
Operations									
IHLW Interim Storage Facility	2018	2040	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Other infrastructure upgrades	2006	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Routine operations	2006	2043	5.59	(a)	(a)	(a)	(b)	(a)	(a)
Retrieval operations	2006	2043	4.60×10^{-2}	(a)	(a)	(a)	(b)	(a)	(a)
Double-shell tank interim stabilization	2006	2043	3.02×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Waste Treatment Plant	2018	2043	(b)	1.19×10^{-4}	4.31×10^{-8}	1.33×10^{-6}	(b)	7.21×10^{-5}	2.43×10^{-4}

Table G–138. Tank Closure Alternative 6C Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2040	2040	2040	2044–2045	2040	2040
Operations *(continued)*									
Waste Treatment Plant, cesium and strontium capsules	2040	2040	(b)	1.19×10^{-4}	4.31×10^{-8}	1.33×10^{-6}	(b)	7.21×10^{-5}	2.43×10^{-4}
Cesium and Strontium Capsule Processing Facility	2039	2040	(b)	7.41×10^{-5}	4.19×10^{-7}	2.51×10^{-5}	(b)	6.94×10^{-2}	1.96×10^{-2}
Modified sluicing retrieval system	2013	2043	2.44×10^{-1}	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	2.81×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
HLW Melter Interim Storage Facilities	2018	2145	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Effluent Treatment Facility	2006	2045	1.18×10^{-1}	6.54×10^{-6}	1.08×10^{-7}	4.03×10^{-6}	(a)	1.53×10^{-3}	4.39×10^{-4}
Evaporator	2006	2043	9.82×10^{-2}	1.33×10^{-4}	5.56×10^{-6}	1.68×10^{-4}	(b)	5.79×10^{-3}	4.04×10^{-3}
Borrow Area C	2006	2052	6.14×10^{-1}	2.92×10^{-4}	9.54×10^{-6}	3.00×10^{-4}	(a)	4.55×10^{-1}	1.43×10^{-1}
Immobilized Low-Activity Waste Interim Storage Facilities	2018	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Deactivation									
IHLW Interim Storage Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Waste Treatment Plant	2044	2045	(b)	(b)	(b)	(b)	1.17×10^{-1}	(b)	(b)
Cesium and Strontium Capsule Processing Facility	2041	2041	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility original	2026	2026	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Effluent Treatment Facility replacement 1	2046	2046	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator original	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Evaporator replacement 1	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Modified sluicing retrieval system	2013	2043	(a)	(a)	(a)	(a)	(b)	(a)	(a)
Mobile retrieval system	2013	2028	(a)	(b)	(b)	(b)	(b)	(b)	(b)
Vacuum-based retrieval system	2029	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Closure									
Ancillary equipment grouting	2013	2037	3.03×10^{-5}	(b)	(b)	(b)	(b)	(b)	(b)
Ancillary equipment removal	2032	2037	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Decontamination and decommissioning of 10 selected facilities	2018	2028	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Tank-filling grout facility construction	2032	2033	(b)	(b)	(b)	(b)	(b)	(b)	(b)

Table G–138. Tank Closure Alternative 6C Maximum Toxic Pollutant Concentrations of Peak Activity Periods *(continued)*

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter) Ammonia 24-hour 2016	Benzene Annual 2040	1,3-Butadiene Annual 2040	Formaldehyde Annual 2040	Mercury 24-hour 2044–2045	Toluene 24-hour 2040	Xylene 24-hour 2040
Closure *(continued)*									
Tank-filling grout facility operations	2034	2043	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Tank-filling grout facility deactivation	2044	2044	(b)	(b)	(b)	(b)	(a)	(b)	(b)
Containment structure construction	2028	2031	(b)	(b)	(b)	(b)	(b)	(b)	(b)
BX and SX tank farm soil removal	2032	2037	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Containment structure deactivation	2038	2040	(b)	(a)	(a)	(a)	(b)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2039	2045	(b)	3.85×10^{-3}	1.12×10^{-4}	3.60×10^{-3}	(a)	3.09	9.37×10^{-1}
Postclosure care	2046	2145	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.17×10^{1}	4.60×10^{-3}	1.27×10^{-4}	4.10×10^{-3}	$\mathbf{1.17\times10^{-1}}$	3.63	1.11

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding acceptable source impact level are shown in **bold**.

Key: HLW=high-level radioactive waste; IHLW=immobilized high-level radioactive waste.

Source: SAIC 2010a.

Table G–139. FFTF Decommissioning Alternative 1 Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2008–2107	2008–2107	2008–2107	2008–2107	2008–2107	2008–2107	2008–2107	2008–2107	2008–2107	2008–2107
Deactivation												
Administrative controls	2008	2107	3.13×10^{1}	4.35	8.12×10^{-1}	6.60×10^{-4}	2.72×10^{-3}	4.05×10^{-5}	4.19×10^{-2}	1.40×10^{-2}	2.29×10^{-3}	3.40×10^{-5}
Total			3.13×10^{1}	4.35	8.12×10^{-1}	6.60×10^{-4}	2.72×10^{-3}	4.05×10^{-5}	4.19×10^{-2}	1.40×10^{-2}	2.29×10^{-3}	3.40×10^{-5}

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.
Source: SAIC 2010b.

Table G–140. FFTF Decommissioning Alternative 1 Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2008–2107	2008–2107	2008–2107	2008–2107	(a)	2008–2107	2008–2107
Deactivation									
Administrative controls	2008	2107	1.32×10^{-4}	3.27×10^{-6}	1.83×10^{-8}	1.10×10^{-6}	(b)	3.38×10^{-3}	9.54×10^{-4}
Total			1.32×10^{-4}	3.27×10^{-6}	1.83×10^{-8}	1.10×10^{-6}	0	3.38×10^{-3}	9.54×10^{-4}

a There is no peak year because no emissions were calculated.
b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Key: FFTF=Fast Flux Test Facility.
Source: SAIC 2010b.

Table G–141. FFTF Decommissioning Alternative 2 Maximum Criteria Pollutant Concentrations of Peak Hanford Site Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter): Carbon Monoxide 1-hour 2016	Carbon Monoxide 8-hour 2016	Nitrogen Dioxide 1-hour 2021	Nitrogen Dioxide Annual 2021	PM_{10} 24-hour 2016	PM_{10} Annual 2016	Sulfur Dioxide 1-hour 2016	Sulfur Dioxide 3-hour 2016	Sulfur Dioxide 24-hour 2016	Sulfur Dioxide Annual 2016
Decommissioning												
Above-grade structure and equipment removal	2013	2020	3.13×10^{2}	4.36×10^{1}	(a)	(a)	1.85×10^{1}	2.75×10^{-1}	4.35×10^{-1}	1.45×10^{-1}	2.38×10^{-2}	3.53×10^{-4}
Backfill of Reactor Containment Building with grout	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Backfill of Buildings 491 East and West with grout	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility construction	2016	2016	1.22×10^{2}	1.69×10^{1}	(a)	(a)	1.28×10^{1}	1.91×10^{-1}	3.02×10^{1}	1.01×10^{1}	1.65	2.45×10^{-2}
Grout facility operations	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility deactivation	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	1.22×10^{-1}	1.70×10^{-2}	(a)	(a)	2.18×10^{-3}	3.24×10^{-5}	1.93×10^{-4}	6.43×10^{-5}	1.05×10^{-5}	1.57×10^{-7}
Construction												
Sodium Reactor Facility	2015	2016	5.16×10^{3}	7.19×10^{2}	(a)	(a)	2.25×10^{1}	3.34×10^{-1}	6.97	2.32	3.81×10^{-1}	5.66×10^{-3}
Remote Treatment Project	2015	2016	3.93×10^{1}	5.47	(a)	(a)	4.19×10^{1}	6.23×10^{-1}	6.20×10^{-2}	2.07×10^{-2}	3.39×10^{-3}	5.04×10^{-5}
Operations												
Sodium preparation	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Reactor Facility	2017	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation												
Sodium Reactor Facility	2019	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Site regrading	2021	2021	(a)	(a)	1.68×10^{3}	1.36	(a)	(a)	(a)	(a)	(a)	(a)
Site revegetation	2021	2021	(a)	(a)	2.53×10^{1}	2.05×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	(a)	(a)	1.88×10^{3}	1.53	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			5.64×10^{3}	7.85×10^{2}	$\mathbf{3.59\times10^{3}}$	2.91	9.58×10^{1}	1.42	3.76×10^{1}	1.25×10^{1}	2.06	3.06×10^{-2}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010b.

Table G–142. FFTF Decommissioning Alternative 2 Maximum Toxic Pollutant Concentrations of Peak Hanford Site Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2016	2022–2121	2017	2022–2121	(a)	2022–2121	2022–2121
Decommissioning									
Above-grade structure and equipment removal	2013	2020	2.63×10^{-2}	(b)	2.26×10^{-6}	(b)	(b)	(b)	(b)
Backfill of Reactor Containment Building with grout	2017	2017	(b)	(b)	1.22×10^{-6}	(b)	(b)	(b)	(b)
Backfill of Buildings 491 East and West with grout	2017	2017	(b)	(b)	7.91×10^{-7}	(b)	(b)	(b)	(b)
Grout facility construction	2016	2016	1.70×10^{-1}	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility operations	2017	2017	(b)	(b)	2.25×10^{-4}	(b)	(b)	(b)	(b)
Grout facility deactivation	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Nonhazardous waste transportation	2013	2020	4.87×10^{-5}	(b)	4.08×10^{-9}	(b)	(b)	(b)	(b)
Construction									
Sodium Reactor Facility	2015	2016	1.40×10^{1}	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2015	2016	1.57×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Sodium preparation	2017	2017	(b)	(b)	(c)	(b)	(b)	(b)	(b)
Sodium Reactor Facility	2017	2018	(b)	(b)	(c)	(b)	(b)	(b)	(b)
Remote Treatment Project	2017	2017	(b)	(b)	(c)	(b)	(b)	(b)	(b)
Deactivation									
Sodium Reactor Facility	2019	2019	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Site regrading	2021	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Site revegetation	2021	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Modified Resource Conservation and Recovery Act Subtitle C barrier construction	2021	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care	2022	2121	(b)	1.09×10^{-2}	(b)	3.67×10^{-3}	(b)	1.13×10^{1}	3.18
Total			1.42×10^{1}	1.09×10^{-2}	2.29×10^{-4}	3.67×10^{-3}	0	1.13×10^{1}	3.18

[a] There is no peak year because no emissions were calculated.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[c] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–143. FFTF Decommissioning Alternative 3 Maximum Criteria Pollutant Concentrations of Peak Hanford Site Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2015	2015	2018	2018	2015	2015	2012	2012	2012	2012
Decommissioning												
Above-grade structure and equipment removal	2013	2020	3.13×10^{2}	4.36×10^{1}	3.00×10^{2}	2.44×10^{-1}	1.85×10^{1}	2.75×10^{-1}	(a)	(a)	(a)	(a)
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility construction	2012	2012	(a)	(a)	(a)	(a)	(a)	(a)	5.04×10^{1}	1.68×10^{1}	2.75	4.09×10^{-2}
Grout facility operations	2013	2014	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Grout facility deactivation	2015	2015	6.78×10^{1}	9.43	(a)	(a)	5.35×10^{1}	7.95×10^{-1}	(a)	(a)	(a)	(a)
Nonhazardous waste transportation	2013	2020	1.22×10^{-1}	1.70×10^{-2}	5.67×10^{-1}	4.61×10^{-4}	2.18×10^{-3}	3.24×10^{-5}	(a)	(a)	(a)	(a)
Construction												
Sodium Reactor Facility	2015	2016	5.16×10^{3}	7.19×10^{2}	(a)	(a)	2.25×10^{1}	3.34×10^{-1}	(a)	(a)	(a)	(a)
Remote Treatment Project	2015	2016	3.93×10^{1}	5.47	(a)	(a)	4.19×10^{1}	6.23×10^{-1}	(a)	(a)	(a)	(a)
Operations												
Sodium preparation	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Reactor Facility	2017	2018	(a)	(a)	(b)	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation												
Sodium Reactor Facility	2019	2019	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	(a)	(a)	(b)	(b)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Site regrading	2018	2018	(a)	(a)	2.24×10^{3}	1.82	(a)	(a)	(a)	(a)	(a)	(a)
Site revegetation	2018	2018	(a)	(a)	2.85×10^{1}	2.32×10^{-2}	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care	2022	2121	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			5.58×10^{3}	7.77×10^{2}	$\mathbf{2.57\times10^{3}}$	2.09	1.36×10^{2}	2.03	5.04×10^{1}	1.68×10^{1}	2.75	4.09×10^{-2}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

b Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010b.

Table G–144. FFTF Decommissioning Alternative 3 Maximum Toxic Pollutant Concentrations of Peak Hanford Site Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2015–2016	2022–2121	2013–2014	2022–2121	(a)	2022–2121	2022–2121
Decommissioning									
Above-grade structure and equipment removal	2013	2020	2.63×10^{-2}	(b)	2.26×10^{-6}	(b)	(b)	(b)	(b)
Removal of Reactor Containment Building below-grade vessels, piping, and components	2013	2014	(b)	(b)	3.88×10^{-6}	(b)	(b)	(b)	(b)
Grout facility construction	2012	2012	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Grout facility operations	2013	2014	(b)	(b)	1.12×10^{-4}	(b)	(b)	(b)	(b)
Grout facility deactivation	2015	2015	(c)	(b)	(b)	(b)	(b)	(b)	(b)
Nonhazardous waste transportation	2013	2020	4.87×10^{-5}	(b)	4.08×10^{-9}	(b)	(b)	(b)	(b)
Construction									
Sodium Reactor Facility	2015	2016	1.40×10^{1}	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2015	2016	1.57×10^{-2}	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Sodium preparation	2017	2017	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Sodium Reactor Facility	2017	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2017	2017	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Deactivation									
Sodium Reactor Facility	2019	2019	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Site regrading	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Site revegetation	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care	2022	2121	(b)	1.09×10^{-2}	(b)	3.67×10^{-3}	(b)	1.13×10^{1}	3.18
Total			1.40×10^{1}	1.09×10^{-2}	1.19×10^{-4}	3.67×10^{-3}	0	1.13×10^{1}	3.18

a There is no peak year because no emissions were calculated.
b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
c Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Key: FFTF=Fast Flux Test Facility.
Source: SAIC 2010b.

Table G–145. FFTF Decommissioning Alternative 2 Maximum Criteria Pollutant Concentrations of Peak Idaho National Laboratory Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Construction												
Sodium Processing Facility	2014	2014	6.66×10^{1}	4.66×10^{1}	9.64	7.72×10^{-1}	1.35×10^{1}	2.71	8.96×10^{-2}	8.07×10^{-2}	3.58×10^{-2}	7.17×10^{-3}
Operations												
Sodium production	2015	2015	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation												
Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			6.66×10^{1}	4.66×10^{1}	9.64	7.72×10^{-1}	1.35×10^{1}	2.71	8.96×10^{-2}	8.07×10^{-2}	3.58×10^{-2}	7.17×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010b.

Table G–146. FFTF Decommissioning Alternative 2 Maximum Toxic Pollutant Concentrations of Peak Idaho National Laboratory Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2014	2014	2014	2014	(a)	2014	2014
Construction									
Sodium Processing Facility	2014	2014	7.01×10^{-3}	8.04×10^{-4}	9.35×10^{-6}	3.95×10^{-4}	(b)	5.17×10^{-2}	1.47×10^{-2}
Operations									
Sodium production	2015	2015	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Sodium Processing Facility	2015	2016	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2017	2017	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Deactivation									
Sodium Processing Facility	2016	2016	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			7.01×10^{-3}	8.04×10^{-4}	9.35×10^{-6}	3.95×10^{-4}	0	5.17×10^{-2}	1.47×10^{-2}

[a] There is no peak year because no emissions were calculated.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–147. FFTF Decommissioning Alternative 3 Maximum Criteria Pollutant Concentrations of Peak Idaho National Laboratory Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
Construction												
Sodium Processing Facility	2014	2014	6.66×10^{1}	4.66×10^{1}	9.64	7.72×10^{-1}	1.35×10^{1}	2.71	8.96×10^{-2}	8.07×10^{-2}	3.58×10^{-2}	7.17×10^{-3}
Operations												
Sodium production	2015	2015	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sodium Processing Facility	2015	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2017	2017	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Deactivation												
Sodium Processing Facility	2016	2016	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote Treatment Project	2018	2018	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			6.66×10^{1}	4.66×10^{1}	9.64	7.72×10^{-1}	1.35×10^{1}	2.71	8.96×10^{-2}	8.07×10^{-2}	3.58×10^{-2}	7.17×10^{-3}

[a] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: FFTF=Fast Flux Test Facility; PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010b.

Table G–148. FFTF Decommissioning Alternative 3 Maximum Toxic Pollutant Concentrations of Peak Idaho National Laboratory Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2014	2014	2014	2014	(a)	2014	2014
Construction									
Sodium Processing Facility	2014	2014	7.01×10^{-3}	8.04×10^{-4}	9.35×10^{-6}	3.95×10^{-4}	(b)	5.17×10^{-2}	1.47×10^{-2}
Sodium production	2015	2015	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Sodium Processing Facility	2015	2016	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2017	2017	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Deactivation									
Sodium Processing Facility	2016	2016	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote Treatment Project	2018	2018	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			7.01×10^{-3}	8.04×10^{-4}	9.35×10^{-6}	3.95×10^{-4}	0	5.17×10^{-2}	1.47×10^{-2}

[a] There is no peak year because no emissions were calculated.

[b] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Key: FFTF=Fast Flux Test Facility.

Source: SAIC 2010b.

Table G–149. Waste Management Alternative 1 Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Carbon Monoxide 1-hour 2009	Carbon Monoxide 8-hour 2009	Nitrogen Dioxide 1-hour 2009	Nitrogen Dioxide Annual 2009	PM_{10} 24-hour 2009	PM_{10} Annual 2009	Sulfur Dioxide 1-hour 2009	Sulfur Dioxide 3-hour 2009	Sulfur Dioxide 24-hour 2009	Sulfur Dioxide Annual 2009
Operations												
Low-level radioactive waste burial grounds	2007	2035	4.16×10^{1}	7.62	1.27×10^{2}	7.05×10^{-2}	7.70×10^{1}	5.46×10^{-1}	6.23×10^{-2}	2.40×10^{-2}	4.88×10^{-3}	3.45×10^{-5}
Deactivation												
Integrated Disposal Facility	2009	2009	4.20×10^{2}	6.50×10^{1}	1.89×10^{3}	1.28	4.30×10^{2}	4.32	6.60×10^{-1}	2.36×10^{-1}	4.45×10^{-2}	4.47×10^{-4}
Postclosure care	2036	2135	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			4.62×10^{2}	7.26×10^{1}	$\mathbf{2.02\times10^{3}}$	1.35	$\mathbf{5.07\times10^{2}}$	4.86	7.23×10^{-1}	2.60×10^{-1}	4.94×10^{-2}	4.82×10^{-4}

Concentration (micrograms per cubic meter)

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–150. Waste Management Alternative 1 Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Ammonia 24-hour 2009	Benzene Annual 2009	1,3-Butadiene Annual 2009	Formaldehyde Annual 2009	Mercury 24-hour (a)	Toluene 24-hour 2036–2135	Xylene 24-hour 2009
Operations									
Low-level radioactive waste burial grounds	2007	2035	1.57×10^{-2}	1.59×10^{-5}	6.29×10^{-7}	1.92×10^{-5}	(b)	(b)	1.27×10^{-3}
Deactivation									
Integrated Disposal Facility	2009	2009	2.01×10^{-1}	2.72×10^{-4}	1.14×10^{-5}	3.43×10^{-4}	(b)	(b)	8.72×10^{-3}
Postclosure care	2036	2135	(b)	(b)	(b)	(b)	(b)	2.65×10^{-2}	(b)
Total			2.16×10^{-1}	2.88×10^{-4}	1.20×10^{-5}	3.62×10^{-4}	0	2.65×10^{-2}	9.99×10^{-3}

Concentration (micrograms per cubic meter)

[a] There is no peak year because no emissions were calculated.

[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Source: SAIC 2010c.

Table G–151. Waste Management Alternative 2 (Treatment and Storage) Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2011–2012	2011–2012	2013–2018	2013–2018	2019–2050	2019–2050	2011–2012	2011–2012	2011–2012	2011–2012
Construction												
T Plant complex expansion	2011	2012	7.55×10^{2}	1.38×10^{2}	(a)	(a)	(a)	(a)	1.02	3.92×10^{-1}	7.97×10^{-2}	5.65×10^{-4}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	8.61×10^{3}	1.58×10^{3}	(a)	(a)	(a)	(a)	1.16×10^{1}	4.47	9.09×10^{-1}	6.44×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	(a)	(a)	9.17×10^{2}	5.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2011	2012	2.87×10^{3}	5.26×10^{2}	(a)	(a)	(a)	(a)	3.87	1.49	3.03×10^{-1}	2.15×10^{-3}
Operations												
T Plant complex expansion	2013	2050	(a)	(a)	5.87×10^{3}	3.25	4.05×10^{1}	2.87×10^{-1}	(a)	(a)	(a)	(a)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	(a)	(a)	1.58×10^{1}	8.77×10^{-3}	1.07×10^{2}	7.60×10^{-1}	(a)	(a)	(a)	(a)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	(a)	(a)	(a)	(a)	1.07×10^{2}	3.28	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2013	2050	(a)	(a)	1.38×10^{2}	7.68×10^{-2}	4.63×10^{2}	3.37×10^{-2}	(a)	(a)	(a)	(a)
Deactivation												
T Plant complex expansion	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			1.22×10^{4}	2.24×10^{3}	$\mathbf{6.94\times10^{3}}$	3.85	$\mathbf{7.17\times10^{2}}$	4.36	1.65×10^{1}	6.36	1.29	9.15×10^{-3}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–152. Waste Management Alternative 2 (Treatment and Storage) Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2013–2018	2013–2018	2013–2018	2013–2018	(a)	2011–2012	2011–2012
Construction									
T Plant complex expansion	2011	2012	(b)	(b)	(b)	(b)	(b)	1.14×10^{-1}	3.25×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	(b)	(b)	(b)	(b)	(b)	1.30	3.70×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	1.31×10^{-1}	5.29×10^{-4}	3.72×10^{-5}	1.56×10^{-3}	(b)	(b)	(b)
Central Waste Complex expansion	2011	2012	(b)	(b)	(b)	(b)	(b)	4.33×10^{-1}	1.23×10^{-1}
Operations									
T Plant complex expansion	2013	2050	7.22×10^{-1}	6.88×10^{-4}	2.89×10^{-5}	8.71×10^{-4}	(b)	(b)	(b)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	1.95×10^{-3}	1.85×10^{-6}	7.77×10^{-8}	2.35×10^{-6}	(b)	(b)	(b)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Central Waste Complex expansion	2013	2050	1.90×10^{-2}	6.42×10^{-5}	8.72×10^{-7}	3.47×10^{-5}	(b)	(b)	(b)
Deactivation									
T Plant complex expansion	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Central Waste Complex expansion	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			8.74×10^{-1}	1.28×10^{-3}	6.70×10^{-5}	2.47×10^{-3}	0	1.84	5.26×10^{-1}

[a] There is no peak year because no emissions were calculated.

[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Key: TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–153. Waste Management Alternative 2, Disposal Group 1, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2051–2052	2051–2052	2051–2052	2051–2052	2019–2021	2019–2021	2051–2052	2051–2052	2051–2052	2051–2052
Construction												
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	2.16×10^{3}	1.54×10^{1}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2050	(a)	(a)	(a)	(a)	1.12×10^{3}	1.13×10^{1}	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility	2051	2052	1.74×10^{4}	2.70×10^{3}	1.21×10^{4}	8.20	(a)	(a)	2.40×10^{1}	8.57	1.62	1.62×10^{-2}
Postclosure care, Integrated Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2051	2052	3.24×10^{4}	5.19×10^{3}	2.25×10^{4}	1.11×10^{1}	(a)	(a)	4.45×10^{1}	1.51×10^{1}	3.08	2.20×10^{-2}
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**4.98×10^{4}**	7.88×10^{3}	**3.46×10^{4}**	1.93×10^{1}	**3.36×10^{3}**	2.72×10^{1}	6.84×10^{1}	2.37×10^{1}	4.70	3.82×10^{-2}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–154. Waste Management Alternative 2, Disposal Group 1, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2051–2052	2051–2052	2051–2052	2051–2052	(a)	2051–2052	2051–2052
Construction									
Integrated Disposal Facility	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility	2009	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility	2051	2052	1.32	2.98×10^{-3}	7.77×10^{-5}	2.56×10^{-3}	(b)	2.06	6.12×10^{-1}
Postclosure care, Integrated Disposal Facility	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2051	2052	2.52	4.03×10^{-3}	1.05×10^{-4}	3.47×10^{-3}	(b)	3.94	1.17
Postclosure care, River Protection Project Disposal Facility	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			3.84	7.01×10^{-3}	1.83×10^{-4}	6.03×10^{-3}	0	6.00	1.78

a There is no peak year because no emissions were calculated.
b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
c Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Source: SAIC 2010c.

Table G–155. Waste Management Alternative 2, Disposal Group 2, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2101–2102	2101–2102	2101–2102	2101–2102	2019–2021	2019–2021	2101–2102	2101–2102	2101–2102	2101–2102
Construction												
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	1.68×10^{4}	1.19×10^{2}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2100	(a)	(a)	(a)	(a)	3.97×10^{2}	3.98	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility	2101	2102	6.16×10^{3}	9.53×10^{2}	4.28×10^{3}	2.90	(a)	(a)	8.46	3.03	5.71×10^{-1}	5.73×10^{-3}
Postclosure care, Integrated Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2101	2102	2.51×10^{5}	4.02×10^{4}	1.74×10^{5}	8.60×10^{1}	(a)	(a)	3.45×10^{2}	1.17×10^{2}	2.39×10^{1}	1.70×10^{-1}
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			$\mathbf{2.57\times10^{5}}$	$\mathbf{4.12\times10^{4}}$	$\mathbf{1.79\times10^{5}}$	8.89×10^{1}	$\mathbf{1.72\times10^{4}}$	$\mathbf{1.24\times10^{2}}$	$\mathbf{3.53\times10^{2}}$	1.20×10^{2}	2.45×10^{1}	1.76×10^{-1}

a This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–156. Waste Management Alternative 2, Disposal Group 2, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2101–2102	2101–2102	2101–2102	2101–2102	(a)	2101–2102	2101–2102
Construction									
Integrated Disposal Facility	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility	2009	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility	2101	2102	4.67×10^{-1}	1.05×10^{-3}	2.74×10^{-5}	9.05×10^{-4}	(b)	7.28×10^{-1}	2.16×10^{-1}
Postclosure care, Integrated Disposal Facility	2103	2202	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2101	2102	1.95×10^{1}	3.12×10^{-2}	8.15×10^{-4}	2.69×10^{-2}	(b)	3.05×10^{1}	9.06
Postclosure care, River Protection Project Disposal Facility	2103	2202	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			2.00×10^{1}	3.23×10^{-2}	8.42×10^{-4}	2.78×10^{-2}	0	3.12×10^{1}	9.27

[a] There is no peak year because no emissions were calculated.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[c] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Source: SAIC 2010c.

Table G–157. Waste Management Alternative 2, Disposal Group 3, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2166–2167	2166–2167	2166–2167	2166–2167	2019–2021	2019–2021	2166–2167	2166–2167	2166–2167	2166–2167
Construction												
Integrated Disposal Facility	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	1.68×10^{4}	1.19×10^{2}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility	2009	2165	(a)	(a)	(a)	(a)	3.97×10^{2}	3.98	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility	2166	2167	6.16×10^{3}	9.53×10^{2}	4.28×10^{3}	2.90	(a)	(a)	8.46	3.03	5.71×10^{-1}	5.73×10^{-3}
Postclosure care, Integrated Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2166	2167	2.51×10^{5}	4.02×10^{4}	1.74×10^{5}	8.60×10^{1}	(a)	(a)	3.45×10^{2}	1.17×10^{2}	2.39×10^{1}	1.70×10^{-1}
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**2.57×10^{5}**	**4.12×10^{4}**	**1.79×10^{5}**	8.89×10^{1}	**1.72×10^{4}**	**1.24×10^{2}**	**3.53×10^{2}**	1.20×10^{2}	2.45×10^{1}	1.76×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–158. Waste Management Alternative 2, Disposal Group 3, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2166–2167	2166–2167	2166–2167	2166–2167	(a)	2166–2167	2166–2167
Construction									
Integrated Disposal Facility	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility	2009	2165	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2165	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility	2166	2167	4.67×10^{-1}	1.05×10^{-3}	2.74×10^{-5}	9.05×10^{-4}	(b)	7.28×10^{-1}	2.16×10^{-1}
Postclosure care, Integrated Disposal Facility	2168	2267	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2166	2167	1.95×10^{1}	3.12×10^{-2}	8.15×10^{-4}	2.69×10^{-2}	(b)	3.05×10^{1}	9.06
Postclosure care, River Protection Project Disposal Facility	2168	2267	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			2.00×10^{1}	3.23×10^{-2}	8.42×10^{-4}	2.78×10^{-2}	0	3.12×10^{1}	9.27

a There is no peak year because no emissions were calculated.
b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
c Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Source: SAIC 2010c.

Table G–159. Waste Management Alternative 3 (Treatment and Storage) Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2011–2012	2011–2012	2013–2018	2013–2018	2019–2050	2019–2050	2011–2012	2011–2012	2011–2012	2011–2012
Construction												
T Plant complex expansion	2011	2012	7.55×10^{2}	1.38×10^{2}	(a)	(a)	(a)	(a)	1.02	3.92×10^{-1}	7.97×10^{-2}	5.65×10^{-4}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	8.61×10^{3}	1.58×10^{3}	(a)	(a)	(a)	(a)	1.16×10^{1}	4.47	9.09×10^{-1}	6.44×10^{-3}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	(a)	(a)	9.17×10^{2}	5.09×10^{-1}	(a)	(a)	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2011	2012	2.87×10^{3}	5.26×10^{2}	(a)	(a)	(a)	(a)	3.87	1.49	3.03×10^{-1}	2.15×10^{-3}
Operations												
T Plant complex expansion	2013	2050	(a)	(a)	5.87×10^{3}	3.25	4.05×10^{1}	2.87×10^{-1}	(a)	(a)	(a)	(a)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	(a)	(a)	1.58×10^{1}	8.77×10^{-3}	1.07×10^{2}	7.60×10^{-1}	(a)	(a)	(a)	(a)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	(a)	(a)	(a)	(a)	1.07×10^{2}	7.59×10^{-1}	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2013	2050	(a)	(a)	1.38×10^{2}	7.68×10^{-2}	4.63×10^{2}	3.28	(a)	(a)	(a)	(a)
Deactivation												
T Plant complex expansion	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Central Waste Complex expansion	2051	2051	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			1.22×10^{4}	2.24×10^{3}	**6.94×10^{3}**	3.85	**7.17×10^{2}**	5.08	1.65×10^{1}	6.36	1.29	9.15×10^{-3}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers; TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–160. Waste Management Alternative 3 (Treatment and Storage) Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2013–2018	2013–2018	2013–2018	2013–2018	(a)	2011–2012	2011–2012
Construction									
T Plant complex expansion	2011	2012	(b)	(b)	(b)	(b)	(b)	1.14×10^{-1}	3.25×10^{-2}
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2011	2012	(b)	(b)	(b)	(b)	(b)	1.30	3.70×10^{-1}
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2018	1.31×10^{-1}	5.29×10^{-4}	3.72×10^{-5}	1.56×10^{-3}	(b)	(b)	(b)
Central Waste Complex expansion	2011	2012	(b)	(b)	(b)	(b)	(b)	4.33×10^{-1}	1.23×10^{-1}
Operations									
T Plant complex expansion	2013	2050	7.22×10^{-1}	6.88×10^{-4}	2.89×10^{-5}	8.71×10^{-4}	(b)	(b)	(b)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2013	2050	1.95×10^{-3}	1.85×10^{-6}	7.77×10^{-8}	2.35×10^{-6}	(b)	(b)	(b)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2019	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Central Waste Complex expansion	2013	2050	1.90×10^{-2}	6.42×10^{-5}	8.72×10^{-7}	3.47×10^{-5}	(b)	(b)	(b)
Closure									
T Plant complex expansion	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Contact-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Remote-Handled Mixed TRU/TRU waste facility (WRAP expansion)	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Central Waste Complex expansion	2051	2051	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			8.74×10^{-1}	1.28×10^{-3}	6.70×10^{-5}	2.47×10^{-3}	0	1.84	5.26×10^{-1}

a There is no peak year because no emissions were calculated.

b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Key: TRU=transuranic; WRAP=Waste Receiving and Processing Facility.

Source: SAIC 2010c.

Table G–161. Waste Management Alternative 3, Disposal Group 1, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter): Carbon Monoxide 1-hour 2051–2052	Carbon Monoxide 8-hour 2051–2052	Nitrogen Dioxide 1-hour 2051–2052	Nitrogen Dioxide Annual 2051–2052	PM_{10} 24-hour 2019–2021	PM_{10} Annual 2019–2021	Sulfur Dioxide 1-hour 2051–2052	Sulfur Dioxide 3-hour 2051–2052	Sulfur Dioxide 24-hour 2051–2052	Sulfur Dioxide Annual 2051–2052
Construction												
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	2.16×10^{3}	1.54×10^{1}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2050	(a)	(a)	(a)	(a)	1.03×10^{3}	1.03×10^{1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	1.50×10^{2}	1.06	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2050	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility, 200-East Area	2051	2052	1.60×10^{4}	2.47×10^{3}	1.11×10^{4}	7.52	(a)	(a)	2.20×10^{1}	7.86	1.48	1.49×10^{-2}
Integrated Disposal Facility, 200-West Area	2051	2052	2.00×10^{3}	3.66×10^{2}	1.39×10^{3}	7.71×10^{-1}	(a)	(a)	2.75	1.06	2.15×10^{-1}	1.52×10^{-3}
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2051	2052	3.24×10^{4}	5.19×10^{3}	2.25×10^{4}	1.11×10^{1}	(a)	(a)	4.45×10^{1}	1.51×10^{1}	3.08	2.20×10^{-2}
Postclosure care, River Protection Project Disposal Facility	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			**5.03×10^{4}**	8.03×10^{3}	**3.50×10^{4}**	1.94×10^{1}	**3.42×10^{3}**	2.73×10^{1}	6.92×10^{1}	2.40×10^{1}	4.78	3.84×10^{-2}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–162. Waste Management Alternative 3, Disposal Group 1, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	Benzene	1,3-Butadiene	Formaldehyde	Mercury	Toluene	Xylene
			24-hour	Annual	Annual	Annual	24-hour	24-hour	24-hour
			2051–2052	2051–2052	2051–2052	2051–2052	(a)	2051–2052	2051–2052
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-East Area	2009	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2009	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility, 200-East Area	2051	2052	1.21	2.73×10^{-3}	7.12×10^{-5}	2.35×10^{-3}	(b)	1.89	5.62×10^{-1}
Integrated Disposal Facility, 200-West Area	2051	2052	1.76×10^{-1}	2.80×10^{-4}	7.30×10^{-6}	2.41×10^{-4}	(b)	2.75×10^{-1}	8.15×10^{-2}
Postclosure care, Integrated Disposal Facility, 200-East Area	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2051	2052	2.52	4.03×10^{-3}	1.05×10^{-4}	3.47×10^{-3}	(b)	3.94	1.17
Postclosure care, River Protection Project Disposal Facility	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			3.91	7.04×10^{-3}	1.84×10^{-4}	6.06×10^{-3}	0	6.10	1.81

[a] There is no peak year because no emissions were calculated.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[c] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Source: SAIC 2010c.

Table G–163. Waste Management Alternative 3, Disposal Group 2, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2101–2102	2101–2102	2101–2102	2101–2102	2019–2021	2019–2021	2101–2102	2101–2102	2101–2102	2101–2102
Construction												
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	1.68×10^{4}	1.19×10^{2}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2100	(a)	(a)	(a)	(a)	3.21×10^{2}	3.22	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	1.50×10^{2}	1.06	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2100	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility, 200-East Area	2101	2102	4.98×10^{3}	7.70×10^{2}	3.46×10^{3}	2.34	(a)	(a)	6.84	2.45	4.62×10^{-1}	4.63×10^{-3}
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	1.85×10^{1}	3.38	7.13	3.96×10^{-3}	(a)	(a)	2.51×10^{-2}	9.67×10^{-3}	1.97×10^{-3}	1.39×10^{-5}
River Protection Project Disposal Facility	2101	2102	2.51×10^{5}	4.02×10^{4}	1.74×10^{5}	8.60×10^{1}	(a)	(a)	3.45×10^{2}	1.17×10^{2}	2.39×10^{1}	1.70×10^{-1}
Postclosure care, River Protection Project Disposal Facility	2103	2202	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			$\mathbf{2.56\times10^{5}}$	$\mathbf{4.10\times10^{4}}$	$\mathbf{1.78\times10^{5}}$	8.84×10^{1}	$\mathbf{1.73\times10^{4}}$	$\mathbf{1.24\times10^{2}}$	$\mathbf{3.52\times10^{2}}$	1.20×10^{2}	2.44×10^{1}	1.75×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–164. Waste Management Alternative 3, Disposal Group 2, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Ammonia 24-hour 2101–2102	Benzene Annual 2101–2102	1,3-Butadiene Annual 2101–2102	Formaldehyde Annual 2101–2102	Mercury 24-hour (a)	Toluene 24-hour 2101–2102	Xylene 24-hour 2101–2102
			Concentration (micrograms per cubic meter)						
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-East Area	2009	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2009	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2100	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility, 200-East Area	2101	2102	3.77×10^{-1}	8.51×10^{-4}	2.22×10^{-5}	7.32×10^{-4}	(b)	5.89×10^{-1}	1.75×10^{-1}
Integrated Disposal Facility, 200-West Area	2051	2052	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care, Integrated Disposal Facility, 200-East Area	2103	2202	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	9.27×10^{-4}	2.00×10^{-6}	3.97×10^{-8}	1.40×10^{-6}	(b)	2.69×10^{-3}	7.79×10^{-4}
River Protection Project Disposal Facility	2101	2102	1.95×10^{1}	3.12×10^{-2}	8.15×10^{-4}	2.69×10^{-2}	(b)	3.05×10^{1}	9.06
Postclosure care, River Protection Project Disposal Facility	2103	2202	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.99×10^{1}	3.21×10^{-2}	8.37×10^{-4}	2.76×10^{-2}	0	3.11×10^{1}	9.23

[a] There is no peak year because no emissions were calculated.
[b] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.
[c] Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.
Source: SAIC 2010c.

Table G–165. Waste Management Alternative 3, Disposal Group 3, Maximum Criteria Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)									
			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		Sulfur Dioxide			
			1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	3-hour	24-hour	Annual
			2166–2167	2166–2167	2166–2167	2166–2167	2019–2021	2019–2021	2166–2167	2166–2167	2166–2167	2166–2167
Construction												
Integrated Disposal Facility, 200-East Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2006	2008	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2019	2021	(a)	(a)	(a)	(a)	1.68×10^{4}	1.19×10^{2}	(a)	(a)	(a)	(a)
Operations												
Low-level radioactive waste burial grounds	2007	2050	(a)	(a)	(a)	(a)	7.70×10^{1}	5.46×10^{-1}	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-East Area	2009	2165	(a)	(a)	(a)	(a)	3.21×10^{2}	3.22	(a)	(a)	(a)	(a)
Integrated Disposal Facility, 200-West Area	2009	2050	(a)	(a)	(a)	(a)	1.50×10^{2}	1.06	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2022	2165	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Closure												
Integrated Disposal Facility, 200-East Area	2166	2167	4.98×10^{3}	7.70×10^{2}	3.46×10^{3}	2.34	(a)	(a)	6.84	2.45	4.62×10^{-1}	4.63×10^{-3}
Integrated Disposal Facility, 200-West Area	2051	2052	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
River Protection Project Disposal Facility	2166	2167	2.51×10^{5}	4.02×10^{4}	1.74×10^{5}	8.60×10^{1}	(a)	(a)	3.45×10^{2}	1.17×10^{2}	2.39×10^{1}	1.70×10^{-1}
Postclosure care, River Protection Project Disposal Facility	2168	2267	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total			$\mathbf{2.56\times10^{5}}$	$\mathbf{4.10\times10^{4}}$	$\mathbf{1.78\times10^{5}}$	8.84×10^{1}	$\mathbf{1.73\times10^{4}}$	$\mathbf{1.24\times10^{2}}$	$\mathbf{3.52\times10^{2}}$	1.20×10^{2}	2.44×10^{1}	1.75×10^{-1}

[a] This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

Note: Total concentrations exceeding applicable standards are presented in **bold**.

Key: PM_{10}=particulate matter with an aerodynamic diameter less than or equal to 10 micrometers.

Source: SAIC 2010c.

Table G–166. Waste Management Alternative 3, Disposal Group 3, Maximum Toxic Pollutant Concentrations of Peak Activity Periods

Facility/System	Start Year	End Year	Concentration (micrograms per cubic meter)						
			Ammonia	**Benzene**	**1,3-Butadiene**	**Formaldehyde**	**Mercury**	**Toluene**	**Xylene**
			24-hour	**Annual**	**Annual**	**Annual**	**24-hour**	**24-hour**	**24-hour**
			2166–2167	**2166–2167**	**2166–2167**	**2166–2167**	**(a)**	**2166–2167**	**2166–2167**
Construction									
Integrated Disposal Facility, 200-East Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2006	2008	(b)	(b)	(b)	(b)	(c)	(b)	(b)
River Protection Project Disposal Facility	2019	2021	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Operations									
Low-level radioactive waste burial grounds	2007	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-East Area	2009	2165	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Integrated Disposal Facility, 200-West Area	2009	2050	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2022	2165	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Closure									
Integrated Disposal Facility, 200-East Area	2166	2167	3.77×10^{-1}	8.51×10^{-4}	2.22×10^{-5}	7.32×10^{-4}	(b)	5.89×10^{-1}	1.75×10^{-1}
Integrated Disposal Facility, 200-West Area	2051	2052	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care, Integrated Disposal Facility, 200-East Area	2168	2267	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Postclosure care, Integrated Disposal Facility, 200-West Area	2053	2152	(b)	(b)	(b)	(b)	(b)	(b)	(b)
River Protection Project Disposal Facility	2166	2167	1.95×10^{1}	3.12×10^{-2}	8.15×10^{-4}	2.69×10^{-2}	(b)	3.05×10^{1}	9.06
Postclosure care, River Protection Project Disposal Facility	2168	2267	(b)	(b)	(b)	(b)	(b)	(b)	(b)
Total			1.99×10^{1}	3.21×10^{-2}	8.37×10^{-4}	2.76×10^{-2}	0	3.11×10^{1}	9.23

a There is no peak year because no emissions were calculated.

b This activity would not contribute to the concentration during the peak year(s) for this pollutant and averaging period.

c Emissions for this activity and pollutant were not calculated because they would be small compared with those for other activities under this alternative, as explained in Section G.2.

Source: SAIC 2010c.

G.4 GENERAL CONFORMITY REVIEW

The Clean Air Act, as amended, requires that Federal actions conform to the host state's "state implementation plan." A state implementation plan provides for the implementation, maintenance, and enforcement of NAAQS for the six criteria pollutants: sulfur dioxide, PM_{10}, carbon monoxide, ozone, nitrogen dioxide, and lead. Its purpose is to eliminate or reduce the severity and number of NAAQS violations and to expedite the attainment of these standards. "No department, agency, or instrumentality of the Federal Government shall engage in or support in any way or provide financial assistance for, license or permit, or approve any activity that does not conform to an applicable implementation plan (40 CFR 93.150)." The final rule for "Determining Conformity of General Federal Actions to State or Federal Implementation Plans" (40 CFR 93.150–160) took effect on January 31, 1994. Hanford and INL are within areas currently designated as attainment for criteria air pollutants (40 CFR 81.348 and 81.313, respectively). Therefore, the alternatives being considered in this *TC & WM EIS* do not require a conformity determination under the provisions of this rule.

G.5 GREENHOUSE GASES

The "natural greenhouse effect" is the process by which part of the terrestrial radiation is absorbed by gases in the atmosphere, thereby warming the Earth's surface and atmosphere. This greenhouse effect and the Earth's radiation balance are affected largely by water vapor, carbon dioxide, and trace gases, all of which are absorbers of infrared radiation and are commonly referred to as "greenhouse gases." Other trace gases include nitrous oxide, chlorofluorocarbons, and methane.

Judging from fiscal year 2006 fuel use (see Chapter 3, Section 3.2), Hanford emissions of carbon dioxide are estimated to be 1.42×10^4 metric tons per year, which is less than 0.0003 percent of the total U.S. emissions of 5.45 billion metric tons per year (DOE 2011). Carbon dioxide equivalents of other greenhouse gases that may be emitted from activities at Hanford are not included in this estimate. Based on the fuel consumption averages for INL (see Chapter 3, Section 3.3, for average values for fiscal years 2001 through 2004), INL emissions of carbon dioxide are estimated to be 3.52×10^4 metric tons per year, which is less than 0.0007 percent of the total U.S. emissions per year.

Emissions of carbon dioxide by alternative are provided in Table G–167. Additional discussion of greenhouse gases and climate change is provided in Chapter 6, Section 6.5. Total emissions for Tank Closure alternatives are lowest for Alternative 1 and highest for Alternative 6A, Option Case. Total emissions for FFTF Decommissioning alternatives are lowest for Alternative 1 and highest for Alternative 3. Total emissions for Waste Management alternatives are lowest for Alternative 1 and highest for Alternative 3, Disposal Group 3.

Table G–167. Estimated Annual Average Carbon Dioxide Emissions by Alternative

Alternative	Emissions (metric tons per year)				Total Emissions[a] (metric tons)
	Onsite Activity	Electricity Use	Employee Vehicles	Total	
Tank Closure (TC)					
TC Alternative 1	10,700	170	12,500	23,300	2,380,000
TC Alternative 2A	70,300	28,500	35,400	134,000	25,200,000
TC Alternative 2B	75,900	19,200	49,400	145,000	20,200,000
TC Alternative 3A	35,300	15,600	38,400	89,300	12,100,000
TC Alternative 3B	36,000	13,400	37,800	87,200	11,900,000
TC Alternative 3C	53,900	22,200	39,300	115,000	15,700,000
TC Alternative 4	39,200	16,100	57,600	113,000	15,600,000
TC Alternative 5	82,900	13,600	43,900	140,000	18,800,000
TC Alternative 6A, Base Case	238,000	109,000	56,100	403,000	104,000,000
TC Alternative 6A, Option Case	246,000	110,000	73,300	429,000	110,000,000
TC Alternative 6B, Base Case	58,100	16,200	56,100	130,000	25,600,000
TC Alternative 6B, Option Case	68,500	18,400	73,300	160,000	31,100,000
TC Alternative 6C	76,100	19,200	49,500	145,000	20,300,000
FFTF Decommissioning					
FFTF Decommissioning Alternative 1	2.75	901	9	913	91,300
FFTF Decommissioning Alternative 2[b]	1,910	75.6	1,210	3,200	28,800
FFTF Decommissioning Alternative 3[b]	149	10.5	1,470	1,630	179,000
Waste Management (WM)					
WM Alternative 1	312	6.56	792	1,110	143,000
WM Alternative 2	41,000	2,010	3,240	46,200	1,890,000
WM Alternative 2, Disposal Group 1	4,160	8.73	8,480	12,700	1,860,000
WM Alternative 2, Disposal Group 2	20,300	651	32,700	53,000	10,400,000
WM Alternative 2, Disposal Group 3	23,300	4.9	32,700	56,000	14,700,000
WM Alternative 3	41,000	2,010	3,240	46,200	1,900,000
WM Alternative 3, Disposal Group 1	4,150	8.73	8,460	12,600	1,850,000
WM Alternative 3, Disposal Group 2	20,200	6.51	32,400	52,700	10,400,000
WM Alternative 3, Disposal Group 3	23,300	4.9	32,400	55,700	14,600,000

[a] Emissions over the duration of the project.
[b] Including emissions for options at Idaho National Laboratory.
Note: Values presented in the table have been rounded to no more than three significant digits, where appropriate.
Key: FFTF=Fast Flux Test Facility.

G.6 REFERENCES

Burk, K.W., 2007, Battelle, Pacific Northwest National Laboratory, Richland, Washington, personal communication (email) to K.W. Owens, Science Applications International Corporation, Germantown, Maryland, "JFDs," May 15.

CEES (Columbia Energy & Environmental Services, Inc.), 2006a, *Steam Reforming Air Emissions Calculations*, WT-ST-048, Rev. 2, Richland, Washington, October 16.

CEES (Columbia Energy & Environmental Services, Inc.), 2006b, *Air Emissions for Deploying 3 LAW Melters in the WTP*, WT-ST-031, Rev. 6, Richland, Washington, October 18.

CEES (Columbia Energy & Environmental Services, Inc.), 2006c, *Air Emission Calculations for WTP 2×6 Melter Configuration*, WT-ST-060, Rev. 1, Richland, Washington, October 18.

CEES (Columbia Energy & Environmental Services, Inc.), 2007, *Revision to Air Emissions for WTP 2×2 Melter Configuration*, WT-ST-033, Rev. 4, Richland, Washington, January 18.

DOE (U.S. Department of Energy), 2003, *Environmental Impact Statement for Retrieval, Treatment, and Disposal of Tank Wastes and Closure of Single-Shell Tanks at the Hanford Site, Richland, WA: Inventory and Source Term Data Package*, DOE/ORP-2003-02, Rev. 0, Office of River Protection, Richland, Washington, April 17.

DOE (U.S. Department of Energy), 2011, *Emissions of Greenhouse Gases in the United States 2009*, DOE/EIA-0573(2009), U.S. Energy Information Administration, Washington, D.C., March.

EPA (U.S. Environmental Protection Agency), 1992, *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised*, EPA-454/R-92-019, Office of Air and Radiation, Research Triangle Park, North Carolina, October.

EPA (U.S. Environmental Protection Agency), 1995, *Compilation of Air Pollutant Emission Factors*, Vol. 1, *Stationary Point and Area Sources*, 5th ed., AP-42, Office of Air and Radiation, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, January.

EPA (U.S. Environmental Protection Agency), 2003, *User's Guide to MOBILE6.1 and MOBILE6.2*: *Mobile Source Emission Factor Model*, EPA420-R-03-010, Office of Transportation and Air Quality, Assessment and Standards Division, August.

EPA (U.S. Environmental Protection Agency), 2004, *User's Guide for the AMS/EPA Regulatory Model – AERMOD*, EPA-454/B-03-001, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division, Research Triangle Park, North Carolina, September.

EPA (U.S. Environmental Protection Agency), 2005, *Technology Transfer Network, Factors Information Retrieval System (FIRE); WebFIRE*, accessed through http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main, December.

EPA (U.S. Environmental Protection Agency), 2007, *2002 National Emissions Inventory Database: On-road Vehicle Data for Adams, Benton, Franklin, and Grant Counties*, Onroad_CAP2002v3_071010, accessed through http//www.epa.gov/ttn/chief/net/2002inventory.html, October 15.

Fluor Hanford (Fluor Hanford, Inc.), 2002, *Environmental Releases for Calendar Year 2001*, HNF-EP-0527, Rev. 11, Richland, Washington, August.

Fluor Hanford (Fluor Hanford, Inc.), 2003, *Environmental Releases for Calendar Year 2002*, HNF-EP-0527, Rev. 12, Richland, Washington, August.

Sagendorf, J.F., J.T. Goll, and W.F. Sandusky, 1982, *XOQDOQ: Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations*, NUREG/CR-2919, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of Systems Integration, Washington, D.C., September.

SAIC (Science Applications International Corporation), 2010a, *Tank Closure Alternatives*, *Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, June 3, August 26, December 10.

SAIC (Science Applications International Corporation), 2010b, *Fast Flux Test Facility Alternatives, Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, November 8.

SAIC (Science Applications International Corporation), 2010c, *Waste Management Alternatives, Scaled Data Sets to Support the "Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington,"* Germantown, Maryland, June 3.

Slaathaug, E.J., 1995, *Tri-Party Agreement Alternative Engineering Data Package for the "Tank Waste Remediation System Environmental Impact Statement,"* WHC-SD-WM-EV-104, Rev. 0, Westinghouse Hanford Company, Richland, Washington, July.

<u>Code of Federal Regulations</u>

40 CFR 50, U.S. Environmental Protection Agency, "National Primary and Secondary Ambient Air Quality Standards."

40 CFR 81.313, U.S. Environmental Protection Agency, "Designation of Areas for Air Quality Planning Purposes," Subpart C, Section 107, "Attainment Status Designations: Idaho."

40 CFR 81.348, U.S. Environmental Protection Agency, "Designation of Areas for Air Quality Planning Purposes," Subpart C, Section 107, "Attainment Status Designations: Washington."

40 CFR 93.150–160, U.S. Environmental Protection Agency, "Determining Conformity of Federal Actions to State or Federal Implementation Plans," Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans."

<u>Washington State Administrative Code</u>

WAC 173-460, Washington State Department of Ecology, "Controls of New Sources of Toxic Air Pollutants," Olympia, Washington.

WAC 173-470, Washington State Department of Ecology, "Ambient Air Quality Standards for Particulate Matter," Olympia, Washington.

WAC 173-474, Washington State Department of Ecology, "Ambient Air Quality Standards for Sulfur Oxides," Olympia, Washington.

WAC 173-475, Washington State Department of Ecology, "Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen Dioxide," Olympia, Washington.

WAC 173-481, Washington State Department of Ecology, "Ambient Air Quality and Environmental Standards for Fluorides," Olympia, Washington.

WAC 173-490, Washington State Department of Ecology, "Emissions Standards and Controls for Sources Emitting Volatile Organic Compounds (VOC)," Olympia, Washington.