2.0 Compliance Summary

PA Hartsock

For the protection of human health and the environment through safe operations, the Hanford Site has compliance programs designed to meet federal, state, and local environmental laws, regulations, and requirements and comply with DOE orders, notices, directives, policies, and guidance. These measures include specific requirements, actions, plans, and schedules identified in the TPA and other compliance or consent agreements. RL and ORP recognize the importance of maintaining a proactive program of self-assessment and regulatory reporting to ensure that environmental compliance is achieved and maintained at the Hanford Site. This report fulfills reporting requirements for the annual compliance status under the environmental standards specified in DOE O 231.1B, *Environmental, Safety and Health Reporting*.

Section 2.0 summarizes the laws and regulations that govern Hanford Site activities with regard to federal environmental protection statutes and associated state and local environmental regulations. This section discusses both permits required under specific environmental protection regulations and EPA- or Ecology-issued notices of violation or non-compliance. Notices of violation are the regulatory means of informing organizations that their work activities are not meeting requirements; notices of non-compliance are informal notifications of regulatory violations.

2.1 Hazardous Materials and Waste Management Statutes and Regulations

This section provides compliance information regarding federal environmental statutes and regulations related to hazardous materials and waste management at the Hanford Site.

2.1.1 Federal Facility Compliance Act of 1992

RE Piippo, CP Noonan

Enacted by Congress on October 6, 1992, the *Federal Facility Compliance Act of 1992* (Public Law 102-386) amends Section 6001 of the RCRA to specify that the U.S. waives sovereign immunity from civil and administrative fines and penalties for RCRA violations. In addition, the RCRA requires EPA to conduct annual inspections of all federal facilities. Authorized states are given authority to conduct inspections of federal facilities to enforce compliance with state hazardous waste programs. A portion of Public Law 102-386 also requires DOE to provide mixed waste information to EPA and the states. DOE provides this information annually as part of the Hanford Site Mixed Waste Land Disposal Restrictions Summary Reports pursuant to TPA Milestone M-26. In 2015, *Calendar Year 2014 Hanford Site Mixed Waste Land Disposal Restrictions Full Report* (DOE/RL-2015-08) met the reporting requirement.

2.1.2 Resource Conservation and Recovery Act of 1976

DI Weyns

Congress enacted RCRA in 1976 to protect human health and the environment. In 1984, the *Hazardous and Solid Waste Amendments* (Public Law 98-616) reauthorized RCRA, imposing new requirements on hazardous waste management. RCRA's central principle is to establish cradle-to-grave management to track hazardous waste from its generation to TSD. The Hanford Site dangerous waste activities are subject to applicable provisions of WAC 173-303, "Dangerous Waste Regulations," including provisions of the Chapter as applied in the TPA.

2.1.2.1 Hanford Facility RCRA Permit

JK Perry

EPA assigned the Hanford Site a single EPA identification number for permitting purposes (WA7890008967); as such, the Hanford Site is a single RCRA facility, though there are numerous TSD units spread over large geographic areas. The permit is issued to eight permittees: RL and ORP as the owners/operators, and six of their contractors: BNI, CHPRC, MSA (the permit identifies MSA as a permittee but not a co-operator), PNNL, WCH, and WRPS. Washington state dangerous waste regulations (WAC 173-303) require Ecology to reissue a permit after a term of up to 10 years. The initial permit was issued on September 27, 1994, for a 10-year term. DOE submitted a permit renewal application on March 30, 2004. The permit expired on September 27, 2004; since that time, Ecology has been endeavoring to prepare and issue a new permit. Until a new permit is issued, DOE continues to operate under the expired permit *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste* (Ecology 1994).

In May 2012, Ecology issued a draft *Hanford Facility Dangerous Waste Permit* (Ecology 2012), incorporating the remaining TSD units not previously clean closed. Ecology received more than 4,000 comments on the draft *Hanford Facility Dangerous Waste Permit* during the comment period held from May 1 to October 22, 2012. Ecology received approximately 1,800 comments from the public and 3,000 comments from DOE. Issues raised during the comment period identified substantial new questions; as a result, Ecology plans to make revisions and reopen the public comment period for the draft renewal permit. Ecology expects this process to take several years, with the process to include the following activities:

- Review and evaluate the comments received from the first comment period
- Revise the permit based on significant information and issues raised
- Re-issue the permit with revisions and responses to the original comments
- Reopen the comment period for sections that were changed
- Prepare responses to the next round of public comments
- Issue the final permit.

No TSD unit additions or deletions occurred during 2015; however, modifications were submitted to change requirements for the following TSD units pursuant to WAC 173-303-830, "Permit Changes:"

- Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility (ETF; Operating Unit Group 3)
- 242-A Evaporator (Operating Unit Group 4)
- 325 Hazardous Waste Treatment Unit (Operating Unit Group 5)
- WTP (Operating Unit 10)
- Integrated Disposal Facility (IDF; Operating Unit 11)
- 400 Area Waste Management Unit (Operating Unit Group 16).

2.1.2.2 Regulatory Agency Inspections

JW Cammann

The Regulatory Agency Inspection Database includes documentation for regulatory agency inspections of DOE facilities on the Hanford Site. Regulatory agency inspections can result in noncompliance or enforcement actions for alleged violations of applicable federal, state, and local laws and regulations. As such, the Regulatory Agency Inspection Database links to the Environmental Action Tracking System. The Environmental Action Tracking System documents alleged regulatory noncompliance and enforcement actions and their status for the Hanford Site (see Section 2.9).

During CY 2015, 86 regulatory agency inspections were conducted at DOE facilities on the Hanford Site: Ecology conducted 48, WDOH 26, EPA (Region 10) 5, the City of Richland 2, and DOE 5.

Ecology inspections were conducted primarily by the Nuclear Waste Program Office located in Richland, WA. Located in Union Gap, WA, the Central Regional Office of Ecology also conducted inspections of DOE facilities on and off the Hanford Site to evaluate hazardous and toxic waste management. EPA Region 10 inspections are focused primarily on asbestos and asbestos-containing material management, including oversight of Ecology inspections under EPA-delegated authority. WDOH inspections were performed by the Office of Radiation Protection, Richland, WA. The WDOH Office of Drinking Water in Spokane, WA also performed sanitary surveys of drinking waste systems. City of Richland inspections are focused on the 300 Area of the Hanford Site to evaluate compliance with Industrial Wastewater Discharge Permit (CR-IU-010) requirements, including the monitoring of wastewater discharges to the publicly owned treatment works. DOE inspections are required under the terms and conditions of the RCRA permit and are supported by the Hanford Site contractors responsible for the facilities being inspected.

Regulatory agency inspections can result in alleged violations of regulations and other concerns. If deemed appropriate, regulatory agencies may initiate a variety of enforcement and compliance actions, which are discussed further in Section 2.9.

2.1.2.2.1 RCRA Inspections

The Ecology and EPA inspections focused on TSD unit compliance with the *Hanford Facility Dangerous Waste Permit* (Ecology 1994) and WAC 173-303, "Dangerous Waste Regulations." The TSD units and other facilities inspected during 2015 included the following:

- 200 Area Effluent Treatment Facility (ETF)
- 1706-KE
- 222-S Laboratory
- 2355 Warehouse
- 207-A Retention Basin
- 242-A Evaporator
- 300/400 Area facilities
- 325 and 331 Buildings
- 350 Complex
- B Plant
- Integrated Disposal Facility (IDF)
- LERF
- Central Waste Complex (CWC)
- Centralized Consolidation/Recycle Center
- Low-level Burial Grounds (LLBG) Trenches 31 and 34
- LLBG Trench 94
- PUREX Storage Tunnel
- Tank Farms
- T-Plant
- Waste Receiving and Processing (WRAP) Facility
- 90-day accumulation areas
- Satellite accumulation areas
- Universal waste management operations.

Section II.O of the RCRA permit addresses general inspection requirements. General inspections are conducted in addition to the TSD unit inspections specified in Parts III, V, and/or VI of the RCRA permit. The RCRA permit requires general inspections of the 100, 200-East, 200-West, 300, and 400 Areas and the Columbia River shoreline. Inspections are performed annually in these areas by DOE and Hanford contractors to identify and correct potential malfunctions, deterioration, operator errors, and discharges, which may cause or lead to the release of dangerous waste constituents to the environment, or that threaten human health. In accordance with RCRA permit requirements, Ecology is notified of the general inspections at least 7 days in advance to allow their participation. RCRA permit general inspection summary reports are maintained in the Hanford Facility Operating Record and Regulatory Agency Inspection Database.

2.1.2.2.2 Clean Air Act Inspections

In 2015, the WDOH inspections focused on compliance of major and minor stack air emission units as well as diffuse and fugitive emission sources, with the Hanford Site Air Operating Permit and Radioactive Air Emissions License FF-01. Some EPA inspections focused on asbestos management under the *Clean Air Act of 1963* and 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants" (NESHAP) Subpart M, "National Emission Standard for Asbestos."

2.1.2.3 RCRA Groundwater Monitoring

MJ Hartman

The Soil and Groundwater Remediation Project (see Section 8) conducts the RCRA groundwater monitoring for the Hanford Site. In 2015, 14 RCRA sites were monitored to determine if contaminated groundwater with dangerous constituents was present, seven sites were monitored to assess the extent of known contaminants, and two sites were monitored under corrective action programs.

LERF (Section 5.3.4.2) and IDF (Section 5.3.3.7) are two of the 14 TSD units operating under Part III of the RCRA permit (WA7890008967). Since June 2006, IDF was operated under a unit-specific groundwater monitoring plan. Because the unit has not yet received waste, monitoring is performed under a Pre-Active Life Program (standby mode).

The other 12 TSD units monitored under RCRA are scheduled to be closed under Part V of the RCRA permit (WA7890008967). Chapter 8 includes a summary of groundwater monitoring activities for these sites during 2015. The detailed groundwater monitoring information for 2015 will be available in September 2016 with the release of *Hanford Site Groundwater Monitoring Report for 2015* (DOE/RL-2016-09).

Groundwater monitoring is required for three regulated, non-RCRA waste facilities. The 200 Area Treated Effluent Disposal Facility ([TEDF], Section 5.3.4.3) and the State-Approved Land Disposal Site (Section 5.3.4.1) are monitored under WAC 173-216, "State Waste Discharge Permit Program." The Solid Waste Landfill is monitored for compliance with requirements in WAC 173-350, "Solid Waste Handling Standards." Wells near these facilities were monitored in 2015 for waste constituents specified in the facility permits.

2.1.3 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)

JW Cammann

In 1980, Congress passed the CERCLA to address response, compensation, and liability for past releases or potential releases of hazardous substances, pollutants, and contaminants to the environment. Because nuclear production and disposal facilities at the Hanford Site resulted in past releases of hazardous substances, pollutants, or contaminants, the facility is subject to CERCLA provisions.

For waste sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure, CERCLA requires a review every 5 years to evaluate the implementation and performance of a remedy to determine if the remedy is or will be protective of human health and the environment. The 5-year review requirement applies to all remedial actions selected under CERCLA Section 121. The CERCLA Five-Year Review Report documents the methods, findings, and conclusions of the 5-year reviews, which can require institutional controls and/or National Resource Damage Assessment and Restoration Program mitigation. The results of the three 5-year reviews conducted since 2000 are documented in the *USDOE Hanford Site First Five-Year Review Report* (EPA 2001a); the *Second CERCLA Five-Year Review Report for the Hanford Site* (DOE/RL-2006-20); and the *Hanford Site Third CERCLA Five-Year Review Report* (DOE/RL-2011-56).

During CY 2015, work continued on the *Fourth CERCLA Five-Year Review Report*. The final report is planned for issuance by May 4, 2017. This new issuance date was negotiated between DOE-RL and EPA to allow consideration of 5 years of groundwater monitoring and pump and treat data.

2.1.3.1 Superfund Amendments and Reauthorization Act of 1986

The *Superfund Amendments and Reauthorization Act* (SARA; Public Law 107-377) amended CERCLA on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first 6 years and made several important changes and additions to the program. SARA:

- Stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites
- Required Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations
- Provided new enforcement authorities and settlement tool
- Increased state involvement in every phase of the Superfund program
- Increased the focus on human health problems posed by hazardous waste sites
- Encouraged greater citizen participation in making decisions on how sites should be cleaned up
- Increased the size of the trust fund to $8.5 billion.

SARA also required EPA to revise the Hazard Ranking System (HRS) to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List (NPL).

2.1.4 Emergency Planning and Community Right-to-Know Act of 1986

GM Fritz

Title III of SARA, also known as the *Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA), requires owners and operators of facilities that handle certain hazardous chemicals on site to provide information on the release, storage, and use of these chemicals to organizations responsible for emergency response planning. EPCRA has four major provisions: emergency planning, emergency release notification, hazardous chemical inventory reporting, and toxic chemical release inventory reporting. Table 2.1 summarizes sections of EPCRA and its requirements, including two annual reports: the *Tier Two Emergency and Hazardous Chemical Inventory*, which provides information about hazardous chemicals stored at each facility in amounts exceeding minimum threshold levels and the *Toxic Chemical Release Inventory*, which describes total annual releases of certain toxic chemicals and associated waste management activities. Table 2.2 provides an overview of reporting under the EPRCA during 2015.

Table 2.1. Emergency Planning and Community Right-to-Know Act Requirements Summary

Section	CFR Section	Reporting Criteria	Due Date	Agencies Receiving Report
302	40 CFR 355, "Emergency Planning and Notification"	Presence of an extremely hazardous substance in quantity equal to or greater than threshold planning quantity at any one time.	Within 60 days of threshold planning quantity exceedance	Local Emergency Planning Committee; State Emergency Response Commission
		Change occurring at a facility that is relevant to emergency planning.	Within 30 days after change has occurred	Local Emergency Planning Committee
304		Release of an extremely hazardous substance or a CERCLA hazardous substance in quantity equal to or greater than reportable quantity.	Initial notification: immediate (within 15 min of knowledge of reportable release). Written follow-up within 14 days of release.	Local Emergency Planning Committee; State Emergency Response Commission
311	40 CFR 370, "Hazardous Chemical Reporting"	The presence at any one time at a facility an Occupational Safety and Health Administration (OSHA) hazardous chemical in quantity ≥10,000 lbs (4,500 kg) or an extremely hazardous substance in quantity equal to or greater than threshold planning quantity or 500 lbs (230 kg), whichever is less.	Revised list of chemicals due within 3 months of a chemical exceeding a threshold	Local Emergency Planning Committee; State Emergency Response Commission; Local Fire Departments
312		The presence at any one time at a facility an OSHA hazardous chemical in quantity equal to or greater than 10,000 lbs (4,500 kg), or an extremely hazardous substance in quantity equal to or greater than threshold planning quantity or 500 lbs (230 kg), whichever is less.	Annually by March 1	Local Emergency Planning Committee; State Emergency Response Commission; Local Fire Departments
313	40 CFR 372, "Toxic Chemical Release Reporting"	Manufacture, process, or use at a facility, any listed Toxic Release Inventory chemical in excess of threshold amount during a CY. Thresholds are 25,000 lbs (11,300 kg) for manufactured or processed or 10,000 lbs (4,500 kg) for otherwise used except for persistent, bio-accumulative, toxic chemicals with thresholds under 100 lbs (45 kg).	Annually by July 1	EPA; State Emergency Response Commission

Table 2.2. Emergency Planning and Community Right-to-Know Compliance Reporting

Section	Description of Reporting	Status	Notes
302	Emergency planning notifications	Yes	
304	Extremely hazardous substance release notification	Not required	No releases occurred
311	Material safety data sheet	Yes	
312	Chemical inventory	Yes	
313	Toxic release inventory	Yes	

The *2015 Hanford Site Tier Two Emergency and Hazardous Chemical Inventory* (DOE/RL-2016-24) was submitted to Ecology's Community Right-To-Know Unit; local emergency planning committees for Benton, Franklin, and Grant counties; and the City of Richland and Hanford Site Fire Department before the annual March 1 deadline. The Hanford Site had 41 hazardous chemicals that exceeded the reporting thresholds. One chemical category (lead acid batteries, which contain sulfuric acid, an extremely hazardous substance) exceeded the reporting threshold for off-site locations (700 Area, 1100 Area, and the Federal Building). Table 2.3 lists the average quantities of the 10 hazardous chemicals stored in greatest quantity on the Hanford Site in 2015.

Table 2.3. Average Quantity of the 10 Hazardous Chemicals Stored in Greatest Quantities

CAS#	Chemical	TPQ	Average Amount (lbs/kg)
7440 23-5	Sodium	10,000	4,624,378/2,097,583
7647-14-5	Sodium chloride	10,000	3,299,181/1,496,483
7664-93-9	Sulfuric acid	500	347,833/157,774
00-00-0	Lead acid batteries	500	332,921/151,010
00-00-0	Diesel fuel (Grades 1 and/or 2)	10,000	601,273/273,058
65997-15-1	Portland Cement	10,000	303,936/137,863
1305-78-8	Calcium oxide	10,000	240,738/109,197
681-74-8	Fly Ash (Class F)	10,000	220,694/100,105
148-60-7	Silica, Crystaline-Quartz	10,000	170,368/77,278
00-00-0	Gasoline	10,000	170,196/77,200

The *2015 Hanford Site Toxic Chemical Release Inventory* report (DOE/RL-2016-38) was submitted to EPA and Ecology before the annual July 1 deadline. During CY 2015, the Hanford Site exceeded activity thresholds for lead, naphthalene, propylene, toluene, and xylene. Information concerning these chemicals is described in Table 2.4.

Table 2.4. Toxic Chemicals Exceeding Reporting Thresholds

Chemical	CAS No.	Non-Exempt Use Description
Lead	7439-92-1	Ammunition fired during range practice by Hanford Safeguards and Security
Naphthalene	91-20-3	Diesel used for stationary equipment
Propylene	115-07-1	Propane gas used site-wide
Xylene	1330-20-7	Gasoline used for stationary equipment
Toluene	108-88-3	Gasoline used for stationary equipment

2.1.5 Reportable Releases

TH Pysto

Federal regulations establish reporting requirements for certain environmental releases, which are reported to the National Response Center, the federal central point of contact for reporting hazardous substances and oil spills. Reportable releases include spills or discharges of hazardous substances to the environment, other than releases permitted under state or federal law. CERCLA Section 103 requires reporting for releases of hazardous substances that equal or exceed specified reportable quantities, including releases that are continuous and stable in quantity and rate but exceed specified limits. Washington State regulations (WAC 173-303-145, "Spills and Discharges into the Environment") also require that spills or non-permitted discharges of dangerous waste or hazardous substances to the environment be reported. The requirement applies to spills or discharges onto the ground, into groundwater or surface water (Columbia River), or in the air such that human health or the environment are threatened, regardless of the quantity of dangerous waste or hazardous substance.

During the reporting period, hazardous substance releases were conservatively assessed under WAC 173-303-145, and notifications were provided to Ecology for various spills and releases. These spills were cleaned up, and materials were disposed in accordance with applicable requirements.

2.1.6 Toxic Substances Control Act

DI Weyns

The Hanford Site has a well-structured program that complies with the *Toxic Substances Control Act* (TSCA; Public Law 94-469) requirements that primarily involve regulation of polychlorinated biphenyls (PCB). Federal regulations for PCB use, storage, and disposal are provided in 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions." Background information regarding Hanford Site PCB management activities are as follows:

- PCB wastes on the Hanford Site are stored and/or disposed of in accordance with 40 CFR 761
- Some radioactive PCB waste remains in extended storage onsite pending the development of adequate treatment and disposal technologies and capacities
- Electrical equipment that might contain PCBs is maintained and serviced in accordance with 40 CFR 761
- Signed on August 31, 2000, the *Framework Agreement for Management of Polychlorinated Biphenyls (PBCs) in Hanford Tank Waste* (EPA et al. 2000) resulted in the TPA agencies and DOE contractors working together to resolve the regulatory issues associated with managing PCB waste at the WTP, tank farms, and affected waste management units adjacent to the tank farms.
- RL submitted the *2015 Polychlorinated Biphenyl Annual Report* (DOE/RL-2016-39) and *2015 Hanford Site Polychlorinated Biphenyl Annual Document Log* (DOE/RL-2016-40) to EPA on June 28, 2016 as required by 40 CFR 761.180, "Records and Monitoring." These documents describe the PCB waste management and disposal activities occurring on the Hanford Site.
- Work performed under risk-based disposal approvals (RBDA) continued in 2015, including but not limited to single-shell tank (SST) waste retrieval activities in accordance with EPA Phase I and II RDBAs for the use of double-shell tank (DST) PCB remediation waste in accordance with

40 CFR 761.61(c), "PCB Remediation Waste." **Note**: Phase I identifies general conditions that apply to the overall strategy and retrieval process, and Phase II identifies tank-specific conditions.

- Work was performed at the 242-A Evaporator under the RBDA for the 200 Area Liquid Waste Processing Facilities.
- The EPA's 2005 RBDA letter allowed for the solidification of the K-Basins North Load-Out Pit (NLOP) sludge, which was a multi-phasic (mixture of liquid and non-liquid phases) PCB remediation waste. The waste was solidified at the Hanford Site T Plant facility to meet radiological treatment standards in preparation for disposal.
- Condition 5 of the NLOP RBDA, requires DOE to submit to EPA plans and schedules for final decontamination and/or disposal of the NLOP treatment system. As of 2015, DOE is developing plans to place additional K-Basins sludge containers in T Plant, which will require removal of the NLOP treatment equipment. When the K-Basins Sludge Project is finalized, EPA will be notified of plans to decontaminate or dispose of the NLOP treatment equipment.

2.1.7 National Environmental Policy Act of 1969 (NEPA)

ES Pennala

NEPA was enacted so that potential impacts, technical factors, and costs are considered during federal decision making. NEPA requires that an environmental impact statement (EIS) be prepared for major federal agency actions that have the potential for significant effects to human health or the environment. A record of decision (ROD) documents decisions concerning EIS proposed actions. An environmental assessment (EA) is prepared when it is uncertain if a proposed action would require preparation of an EIS. A Finding of No Significant Impact (FONSI) may be issued to present the reasons why an action will not have a significant effect on human health or the environment and therefore not require the preparation of an EIS. A supplement analysis is prepared to consider significant new information or changed circumstances relevant to environmental concerns and bearing on the proposed action or its impacts.

Certain proposed actions may be categorized into classes that have been analyzed and determined to have no significant environmental impact individually or cumulatively (10 CFR 1021, "National Environmental Policy Act Implementing Procedures," Subpart D, "Typical Classes of Actions," Appendices A and B). Known as categorical exclusions, these actions are exempt from NEPA EA or EIS requirements if certain eligibility criteria per 10 CFR 1021.410 (proposed action fits classes of actions, has no extraordinary circumstances, and is not segmented into smaller actions to avoid significance or is connected to other actions with potentially significant impacts) and integral element conditions (10 CFR 1021, Subpart D, Appendix B) are met. Some categorical exclusions are applicable to general DOE actions and do not require written documentation for application.

2.1.7.1 Hanford Site Environmental Impact Statements

The following subsections summarize the status of NEPA documentation planned or underway at the Hanford Site during CY 2015. The NEPA documentation for the Hanford Site is available online at http://www.hanford.gov/page.cfm/OfficialDocuments/Documents. Ongoing EISes related to the Hanford Site are described in the following sections.

2.1.7.1.1 Natural Gas Pipeline EIS (DOE/EIS-0467)

On January 23, 2012, DOE published "Notice of Intent To Prepare an Environmental Impact Statement for the Acquisition of a Natural Gas Pipeline and Natural Gas Utility Service at the Hanford Site, Richland, WA, and Notice of Floodplains and Wetlands Involvement (DOE/EIS-0467)" in the *Federal Register* (77 FR 3255). The EIS would evaluate the environmental impacts of a proposal to enter into a contract with Cascade Natural Gas Corporation supplier in Washington State to construct, operate, and maintain a natural gas pipeline. The pipeline would deliver natural gas to support the WTP (Section 5.6) and the 242-A Evaporator (Section 5.4.4.4) operations in the 200-East Area. The proposed pipeline would begin from a new interconnect tap on the existing Williams Northwest Pipe transmission line in Franklin County north of the Pasco, WA airport and run westerly across non-DOE lands under the Columbia River, crossing near the Hanford Site 300 Area before turning northwest and paralleling Route 4S. The pipeline would terminate at the WTP and 242-A Evaporator.

Preparation of the draft Natural Gas Pipeline EIS continued during CY 2015. Activities included evaluating Proposed Action and No Action Alternative as well as pipeline route alternatives and 200-East Area interface options (direct piping of natural gas to the WTP and 242-A Evaporator steam boilers or direct piping of natural gas to a new steam plant to be constructed with steam piped to the boilers). The Final Natural Gas Pipeline EIS will contain comments made to the draft EIS and responses to the comments, and will identify a preferred main pipeline route alternative and a preferred 200-East Area interface option. The schedules for the issuance and publication of the draft (for public comment) is on hold. Workshops are planned in FY 2016 to determine a path forward. Final EIS and ROD are yet to be determined.

2.1.7.1.2 Final Long-Term Management and Storage of Elemental Mercury Supplemental Environmental Impact Statement (DOE/EIS-0423-S1)

Pursuant to the *Mercury Export Ban Act of 2008* (Public Law 110-414), DOE was directed to designate a facility or facilities for the long-term management and storage of elemental mercury generated within the United States. As a result, DOE issued the *Final Long-Term Management and Storage of Elemental Mercury Environmental Impact Statement* (Mercury Storage EIS; DOE/EIS-0423) in January 2011 that evaluated environmental impacts associated with the reasonable alternatives for managing and storing elemental mercury at seven candidate locations (Colorado, Idaho, Missouri, Nevada, South Carolina, Texas, and Washington); and identified the Waste Control Specialists, LLC, site near Andrews, Texas, as the Preferred Alternative for the long-term management and storage of elemental mercury. On June 5, 2012, DOE announced an intent to prepare a supplement (DOE/EIS-0423-S1) to the January 2011 EIS to evaluate alternatives for a facility at and near the Waste Isolation Pilot Plant (WIPP) near Carlsbad, NM.

Based on analysis in this SEIS and public comment, DOE has not changed its Preferred Alternative, the Waste Control Specialists, LLC, site near Andrews, Texas. DOE will issue a Record of Decision no sooner than 30 days after publication of the EPA Notice of Availability for the *Final Mercury Storage SEIS* in the *Federal Register*. The selection of a site will be based on the January 2011 *Mercury Storage EIS*, this *Mercury Storage SEIS*, and other appropriate factors and will be announced in a Record of Decision in the *Federal Register*.

2.1.7.2 Hanford Site Environmental Assessments

Ongoing environmental assessments related to the Hanford Site are described in the following sections.

2.1.7.2.1 Draft Environmental Assessment for Closure of Nonradioactive Dangerous Waste Landfill and Solid Waste Landfill (DOE/EA-1707)

This draft environmental assessment (DOE/EA-1707) provides information and analyses of proposed DOE activities associated with closure of the DOE Hanford Site's Nonradioactive Dangerous Waste Landfill (NRDWL) and the Solid Waste Landfill (SWL) located southeast of the Central Plateau off Army Loop Road (Section 5.2.2.2.2). Work on DOE/EA-1707 has been temporarily suspended. The final EA and FONSI are on hold pending program priority decisions.

2.1.7.2.2 Final Environmental Assessment for Proposed Conveyance of Land at the Hanford Site, Richland, Washington (DOE/EA-1915)

On September 19, 2012, DOE published "Notice of Intent To Prepare an Environmental Assessment (EA) for the Proposed Conveyance of Land at the Hanford Site, Richland, WA and Notice of Potential Floodplain and Wetland Involvement" in the *Federal Register* (77 FR 58112). DOE announced its intent to prepare an EA to assess the potential environmental effects of conveying approximately 1,641 ac (664 ha) of Hanford Site land to a local economic development organization. Conveyance of the land could include title transfer, lease, easement, license, or a combination of these realty actions. The Tri-City Development Council (TRIDEC), a DOE designated Community Reuse Organization and 501(c)(6) nonprofit corporation, submitted a proposal to DOE in May 2011 (amended October 2011) requesting the transfer of the approximately 1,641 ac (664 ha) of land located in the southeastern corner of the Hanford Site near the City of Richland in Benton County, WA for economic development purposes. Due to continuing mission needs on some of the requested lands, DOE began assessing a 4,413-ac (1786 ha) area to identify sufficient land that would be suitable for conveyance to TRIDEC for economic development.

On December 19, 2014, Congress passed the *Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015* (Public Law 113-291), which contains language directing DOE to transfer 1,641 ac (664 ha) of land to the west of Hanford's 300 Area (the land conveyance area) to TRIDEC by September 30, 2015. Conveyance of land from DOE ownership will necessitate modification of the *Hanford Facility Resource Conservation and Recovery Act Permit* (see Section 2.1.2.1). Based on the analysis presented in the Final EA, which considered comments received on the Draft EA and the commitments specified in the Mitigation Action Plan, DOE determined that the Proposed Action will not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, the preparation of an EIS was not required, and DOE issued a FONSI on September 30, 2015.

2.1.7.2.3 Draft Programmatic Environmental Assessment for Recycle of Scrap Metals Originating from Radiological Areas (DOE/EA-1919)

During CY 2015, work continued on completing the *Programmatic Environmental Assessment for the Recycle of Scrap Metals Originating from Radiological Areas* (DOE/EA-1919). DOE senior managers are reviewing the EA and comment response document. The EA evaluates alternatives for the management of scrap metal originating from DOE radiological control areas, including a proposed action to allow for the recycle of uncontaminated scrap metal that meets *Radiation Protection of the Public and the Environment*

(DOE O 458.1) requirements. Metals with volumetric radioactive contamination are not included in the scope of this Programmatic EA. DOE plans to complete the Programmatic EA, issue a FONSI, or prepare a Programmatic EIS prior to deciding whether to implement a change to the policy established (Richardson 2000) that imposed an agency-wide suspension on unrestricted release of scrap metal recycling that originated from radiological areas at DOE facilities. The policy was in response to public concerns about potential effects of radioactivity in or on metal recycled from DOE facilities.

2.1.7.2.4 Final Environmental Assessment for Expansion of Borrow Areas on the Hanford Site (DOE/EA-1934)

The *Environmental Assessment for Expansion of Borrow Areas on the Hanford Site* (DOE/EA-1934 [2013]) evaluated the potential environmental impacts of expansion or continued use of existing sand and gravel pits located on the Hanford Site (Pits F, H, N, 6, 9, 18, 21, 23, 24, 30, and 34) and established one new borrow area source in the 100 Area for ongoing construction activities and fill material following remediation activities. The scope of this EA did not include borrow sources for silt-loam material. On October 15, 2013, the *Expansion of Borrow Areas on the Hanford Site Mitigation Action Plan for DOE/EA-1934* (WCH-561) was issued. The purpose of the proposed action in this EA is to meet DOE's need to secure raw aggregate sand and gravel material (approximately 10,714,000 bank cubic meters) to support ongoing environmental cleanup restoration projects (backfill of remediated waste sites), as well as construction and maintenance activities across the Hanford Site. Although final remedial action decisions have yet to be made for some cleanup work, the proposed action would support the projected needs for sand and gravel for approximately 10 years.

Section 4.g of DOE Order 451.1B, Chg 3, *National Environmental Policy Act Compliance Program*, requires "[t]racking and annually reporting progress in implementing a commitment for environmental impact mitigation that is essential to render the impacts of a proposed action not significant, or that is made in a record of decision." Required by DOE Order 451.1B, the *Mitigation Action Plan Annual Report Calendar Year 2015* (DOE/EA-1934 [2016]) was issued in February 2016.

2.1.7.3 Hanford Site Categorical Exclusions

Categorical exclusions encompass classes of actions that DOE has analyzed and determined do not individually or cumulatively have a significant effect on human health or the environment and for which neither an EA nor an EIS is required (76 FR 63764, "National Environmental Policy Act Implementing Procedures").

On August 9, 2012, the DOE NEPA Compliance Officer directed the elimination of 16 site-wide categorical exclusions (effective December 31, 2012) and requested Hanford Site contractors to submit for approval annual categorical exclusions for routine and recurring work activities in accordance with the provisions of the newly modified NEPA implementing procedures. Activity-specific categorical exclusions continue to be submitted to the DOE NEPA compliance officer for non-routine, non-recurring, project-specific work activities. A standard format was developed for use by the DOE NEPA compliance officer to perform and document the results of NEPA review screening activities. The compliance officer approved 21 annual categorical exclusions on December 31, 2015 to cover routine and recurring work activities planned to be performed during FY 2016.

2.1.8 Institutional Controls Plan

R Ranade

The *Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions and RCRA Corrective Actions* (DOE/RL 2001-41) describes the institutional controls for the Hanford Site in accordance with CERCLA and/or RCRA decision documents. The CERCLA decision documents present the selected remedial actions chosen in accordance with CERCLA as amended by the SARA and implemented under 40 CFR 300. CERCLA decision documents are developed as part of the cleanup mission at the Hanford Site, which began in 1989 following the end of the national defense mission. The selected remedies chosen may include institutional controls and the CERCLA decision documents identify the specific requirements for these controls.

Institutional controls (ICs) are primarily administrative in nature and typically are used to augment the engineered components of a selected remedy to minimize the potential for human exposure to residual contaminants. Active ICs, such as controlling access to the Hanford Site or activities that may affect remedial action, are generally employed during remediation. After remediation is completed, passive ICs are employed such as permanent markers, retaining public records and archives, or sustaining regulations regarding land or resource use. Some active ICs such as monitoring and controlling access to the area also may be employed after remediation is completed.

Through contractors, DOE conducts ICs assessments as required by the CERCLA and/or RCRA decision documents annually. Hanford Site CERCLA 5-year review addresses a "roll up" of 5-year review of the annual assessments. The "roll up" serves as a means to evaluate the effectiveness of the ICs. The contractors provide an annual update on the effectiveness of the ICs to EPA and Ecology at the area unit managers meetings each September. Minutes from the unit managers' meeting are available on the TPA AR PIR website (TPA 2016b).

The MSA Long-term Stewardship (LTS) organization is responsible for managing ICs related to Hanford Site access control and the wastes sites in the 100-F Area and the 100-K Area. In CY 2015, the warning signs along the Hanford Site boundary and at the entrance of 100-F Area were in place, and no broken fences were observed. Review of excavation permits and Site evaluation process was used to ensure compliance with ICs restricting drilling or excavation into deep zone (below 15 ft [4.6 m]).

The MSA LTS Program also conducted an IC assessment at the 300 Area Fire Station to ensure that their operational procedures did not conflict with IC identified in the final 300 Area ROD. The 300 Fire Station is compliant with the required ICs.

The River Corridor Project has a number of institutional controls in both interim action and final ROD documents. In CY 2015, access controls were in place and active for the River Corridor Project, and no public trespass events at waste sites were reported. In addition, approved excavation permits were in place for all active remediation activities assessed. Warning signs were in place at access road entrances to active remediation in the 100 and 300 areas. Required shoreline signage checked during the 2015 institutional controls assessment was present at the 300 Area and at the reactor in the 100 Area.

The operable units in the Central Plateau Project also has a number of institutional controls in both interim and final ROD documents. In CY 2015, an assessment of institutional controls at 200-UP-1 Operable Unit, 221 U Facility, and 200 ZP 1 Operable Unit did not identify deficiencies.

2.1.9 Federal Insecticide, Fungicide, and Rodenticide Act

JM Rodriguez

EPA administers the *Federal Insecticide, Fungicide, and Rodenticide Act* (7 U.S.C. 136 et seq.). The Washington State Department of Agriculture administers standards to regulate implementation of the Act in the state, including the "Washington Pesticide Control Act" (RCW 15.58), "Washington Pesticide Application Act" (RCW 17.21), and rules relating to general pesticide use codified in WAC 16-228, "General Pesticide Rules." Commercial pesticides are applied on the Hanford Site by commercial pesticide operators that are listed on one of two commercial pesticide applicator licenses and by a licensed private commercial applicator.

2.2 Radiation Protection Statutes and Regulations

JW DeMers

The Hanford Site is subject to radiation protection statutes and regulations designed to protect the health and safety of the public, workforce, and the environment. Relevant laws and regulations are described in the following sections.

2.2.1 Atomic Energy Act of 1954

To ensure proper management of radioactive materials, the *Atomic Energy Act of 1954* (AEA; 42 U.S.C. 2011 et seq.) and its amendments include provisions to delegate roles and responsibilities to control radioactive materials and nuclear energy primarily to DOE, the U.S. Nuclear Regulatory Commission (NRC), and EPA. Through the AEA, DOE regulates the control of radioactive materials under its authority, including the TSD of low-level radioactive waste from its operations. Sections of the AEA authorize DOE to establish radiation protection standards for itself and its contractors. Accordingly, DOE promulgated a series of regulations (e.g., 10 CFR 820, "Procedural Rules for DOE Nuclear Activities;" 10 CFR 830, "Nuclear Safety Management;" and 10 CFR 835, "Occupational Radiation Protection"). Additional DOE directives to protect public health and the environment from potential risks associated with radioactive materials include DOE O 435.1, Chg. 1, *Radioactive Waste Management* and DOE O 458.1, *Radiation Protection of the Public and Environment*. Hanford Site operations are subject to these regulations and directives.

DOE directives may be accessed via the Departmental Directives Program website at https://www.directives.doe.gov/. DOE technical standards may be accessed via the DOE Office of Environment, Health, Safety & Security website at http://energy.gov/ehss/services/nuclear-safety/department-energy-technical-standards-program.

2.2.2 DOE O 458.1, Radiation Protection of the Public and the Environment

The purpose of DOE O 458.1 is to establish standards and requirements for conduct of DOE and DOE contractor operations with respect to radiological protection of the public and the environment. This order was developed and issued consistent with DOE's policy to implement legally applicable radiation protection requirements; consider and adopt, as appropriate, recommendations by authoritative organizations (e.g., the National Council on Radiation Protection and Measurements [NCRP] and the International Commission on Radiological Protection [ICRP]); and adopt and implement standards generally consistent with those of the NRC for DOE facilities and activities not subject to NRC authority.

Specifically, relative to guidance, standards, and regulatory requirements existing at the time of its issuance, this order adopted applicable standards issued by the NCRP and ICRP, incorporated regulatory requirements applicable to DOE operations, and consolidated and upgraded DOE guidance for contaminated property.

DOE O 458.1 applies to all DOE elements and contractors performing work for DOE, as provided by law and/or contract, and as implemented by the appropriate contracting officer. This Order was developed and issued under the authority of the AEA as amended, which authorizes DOE to provide for the radiological health and safety of the public for operations conducted under DOE direction.

Relative to the radiological health and safety of the public, the goals of DOE O 458.1 are to ensure that DOE operations achieve the following:

- Maintain radiation exposures to the public within established limits
- Control radioactive contamination through the management of real and personal property
- Ensure potential exposures to the public are as far below established limits as is reasonably achievable
- Ensure DOE facilities have the capabilities, consistent with the types of operations conducted, to monitor routine and non-routine releases and to assess doses to the public.

In addition to providing radiological protection to the public, the objective of DOE O 458.1 is to provide radiological protection of the environment to the extent practical.

DOE O 458.1 also provides derived concentration guide values as reference values for conducting radiological environmental protection programs at operational DOE facilities and sites. Table 2.5 provides the radiation standards (dose limits) for protection of the public from all routine DOE concentrations. These DOE-derived concentration guide values are based on a committed dose standard of 100 mrem (1 mSv) due to ingestion, inhalation, or direct exposure during a given year, and are provided for three exposure pathways: ingestion of water, inhalation of air, and immersion in a gaseous cloud. This order also provides radiological protection requirements and guidelines for cleanup of residual radioactive material, management of the resulting wastes and residues, and clearance of property. These requirements and guidelines are applicable at the time the property is released.

Table 2.5. Radiation Standards for Public Protection from All Routine DOE Concentrations

All Pathways (DOE O 458.1)		
Effective dose equivalent for any member of the public from all routine DOE operations† shall not exceed values below.		
	Effective Dose Equivalent‡	
	mrem/yr	**mSv/yr**
Routine public dose	100	1
Potential authorized temporary public dose§	500	5
Dose to Native Aquatic Animal Organisms from Liquid Discharges (DOE O 458.1)		
Radioactive material in liquid waste discharged to natural waterways shall not cause an absorbed dose** to native aquatic animal organisms that exceed 1 rad (10 milligray [mGy]) per day.		
Drinking Water Pathway Only: 40 CFR Parts 9, 141, and 142 (65 FR 76708, "National Primary Drinking Water Regulations; Radionuclides; Final Rule"); WAC 246-290, "Group A Public Water Supplies;" and DOE O 458.1		
Radionuclide concentrations in DOE-operated public drinking water supplies shall not cause persons consuming the water to receive an effective dose equivalent greater than 4 mrem (0.04 mSv)/yr. DOE operations shall not cause private or public drinking water systems downstream of the facility discharge to exceed the radiological drinking water limits in 40 CFR Parts 9, *OMB Approvals Under the Paperwork Reduction Act*; 141, *National Primary Drinking Water Regulations*; and 142, *National Primary Drinking Water Regulations Implementation*.		
Air Pathways Only (40 CFR 61, "National Emission Standards for Hazardous Air Pollutants")		
Public dose limit at location of maximum annual air concentration as a consequence of routine DOE operations†	**Effective Dose Equivalent‡**	
	mrem/year	**mSv/year**
	10	0.1

mrem = millirem; mSv = millisievert; rem = roentgen equivalent in man; Sv = sievrert
*Radiation doses received from natural background, residual weapons testing and nuclear accident fallout, medical exposure, and consumer products are excluded from the implementation of these dose limits.
†Routine DOE operations imply normal, planned activities and do not include actual or potential accidental or unplanned releases.
‡Effective dose equivalent is expressed in rem (or mrem) and Sv (or mSv).
§Authorized temporary annual dose limits may be greater than 100 mrem (1 mSv)/yr but cannot exceed 500 mrem (5 mSv)/yr if unusual circumstances exist that make avoidance of doses impracticable to the public. DOE-RL is required to request and receive specific authorization from DOE-HQ for an increase from the routine public dose limit to a temporary annual dose limit.
**Absorbed dose is expressed in rad (or millirad) with the corresponding value in gray (or mGy) in parentheses.

2.2.3 DOE O 435.1, Radioactive Waste Management

OA Farabee, JA Reddick

The purpose of DOE O 435.1 is to establish requirements to manage all high-level waste (HLW), transuranic waste, and low-level waste (LLW), including the radioactive component of mixed waste (HLW, transuranic waste, and LLW containing chemically hazardous constituents) in a safe manner that is protective of the worker, public health, and the environment. The order takes a cradle-to-grave approach to managing waste and includes requirements for waste generation, storage, treatment, disposal, and post-closure monitoring of facilities.

Radioactive waste shall be managed such that the requirements of other DOE orders, standards, and regulations are met, including 10 CFR 835; DOE O 440.1B, *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*; and DOE O 458.1, *Radiation Protection of the Public and the Environment*.

2.3 Air Quality Statutes and Regulations

RA Kaldor

Below is information on federal, state, and local statutes applicable to the Hanford Site air quality program.

2.3.1 Air Quality Regulatory Authority

The federal *Clean Air Act* was enacted to protect and enhance air quality and is the legal basis for federal, state, and local air quality regulations. Originally passed in 1963, the law has been revised extensively on numerous occasions. The most recent revision, the *Clean Air Act Amendments of 1990* (Public Law 101-549) provides the framework for a significant portion of current federal air quality regulations. The Washington Clean Air Act (RCW 70.94), which parallels and supplements federal law, has been revised periodically to keep pace with federal changes. EPA provides high-level programmatic oversight of the air quality program on the Hanford Site and has delegated authority for implementing applicable *Clean Air Act* regulations to designated state and local regulatory agencies.

WDOH regulates radioactive air emissions on the Hanford Site by enforcing applicable federal requirements in 40 CFR 61 (NESHAPs) Subparts A and H and state requirements in WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides" and WAC 246-247, "Radiation Protection – Air Emissions." Federal regulations for radioactive air emissions are contained in 40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities."

Ecology regulates criteria and toxic air pollutant emissions at the Hanford Site by enforcing applicable federal requirements in 40 CFR 52, "Approval and Promulgation of Implementation Plans;" 40 CFR 60, "Standards of Performance for New Stationary Sources;" 40 CFR 61; 40 CFR 63, "NESHAPs for Source Categories;" 40 CFR 68, "Chemical Accident Prevention Provisions;" and 40 CFR 82, "Protection of Stratospheric Ozone;" as well as the state requirements in WAC 173-400, "General Regulations for Air Pollution Sources;" WAC 173-460, "Controls for New Sources of Toxic Air Pollutants;" WAC 173-480; and WAC 173-491, "Emission Standards and Controls for Sources Emitting Gasoline Vapors." Criteria and toxic air pollutant emissions are often referred to as nonradioactive air emissions at the Hanford Site. Criteria pollutants are particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, lead, and volatile organic compounds. Toxic air pollutants are other chemical contaminants as regulated by Washington State.

The Benton Clean Air Agency regulates demolition and asbestos renovation activities at the Hanford Site in accordance with federal requirements in 40 CFR 61, Subpart M, "National Emission Standard for Asbestos." The Benton Clean Air Agency also regulates outdoor burning activities at the Hanford Site in accordance with state requirements in WAC 173-425, "Outdoor Burning."

2.3.2 Air Permits

Hanford Site contractors evaluate each proposed new or modified emission unit using the new source review requirements of radioactive air emissions (WAC 246-247, "Radiation Protection – Air Emissions") and criteria and toxic air pollutants (WAC 173-400-110, "New Source Review (NSR) for Sources and Portable Sources" and WAC 173-460-040, "New Source Review") to determine whether a notice of construction application must be submitted to the WDOH and/or Ecology (as applicable) for approval before construction or operation of the proposed source.

Hanford Site radioactive air emission sources are operated in accordance with the Radioactive Air Emissions License for the Department of Energy Richland Operations Office Hanford Site, License FF-01 issued by the WDOH in February 2012. The FF-01 license is a compilation of all applicable radioactive air emission requirements and is renewed every 5 years. For each emission unit, the FF-01 license includes either an approval to modify/construct or an operating license. Overall, Hanford Site radioactive air emissions are controlled to sufficiently low levels to ensure the resultant exposure to any off-site individual remains well below the 10 mrem (100 mSv)/yr specified in 40 CFR 61.92, "Standard." Hanford Site radioactive air emissions data are published annually in the radionuclide air emissions report for the Hanford Site (DOE/RL-2016-10, *Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 2015*).

As a major source of air pollutants, the Hanford Site is subject to the air operating permit requirements in 40 CFR 70, "State Operating Permit Programs" and WAC 173-401, "Operating Permit Regulation." In coordination with WDOH and the Benton Clean Air Agency, Ecology issued Renewal 2 of the Air Operating Permit for a period of 5 years, effective April 1, 2013. Renewal 2 was issued to incorporate new WDOH and Ecology air emission licenses, approval orders, and updated regulatory requirements. The Air Operating Permit is a compilation of applicable *Clean Air Act* requirements for both radioactive and criteria/toxic air pollutant emissions, including the radioactive air emissions license FF-01 issued by WDOH and Notice of Construction Approval Orders issued by Ecology. The Air Operating Permit requires the submittal of semiannual reports to the regulatory agencies documenting the status of required monitoring and permit deviations. In addition, an annual report documenting the compliance status of Hanford Site emission sources against applicable *Clean Air Act* requirements, and an annual report that documents total emissions of criteria and toxic pollutants is also required.

The WDOH, Ecology, and the Benton Clean Air Agency conduct inspections of Hanford Site emission sources to verify compliance with applicable *Clean Air Act* requirements. Hanford Site contractors and DOE actively work to resolve any potential compliance issues identified during these inspections. During 2015, regulatory agencies conducted over 28 *Clean Air Act* inspections on the Hanford Site. A total of nine violations were alleged involving airborne radioactive materials at the 618-10 Burial Ground, operation of 222-SE engine in excess of 100 hours in a calendar year, and failure to monitor stack air emissions continuously or operating outside sampling system design parameters at PUREX, B-Plant, and the Canister Storage Building (also see Section 2.1.2.2.2).

2.4 Water Quality Statutes and Regulations

M Kamberg

This section provides information on federal, state, and local requirements and permits for water quality protection.

2.4.1 Federal Permit – Discharges to Columbia River

The *Clean Water Act of 1977*, as amended, applies to discharges to surface waters in the United States. At the Hanford Site, regulations are applied through 40 CFR 122, "EPA Administered Permit Programs: The National Pollutant Discharge Elimination System." DOE does not currently have any discharges to the Columbia River requiring permits.

2.4.2 State Waste Discharge Permit – Discharges to the Soil Column/Groundwater

Ecology's Wastewater Discharge Permit program regulates discharges to state waters, including groundwater. Four Ecology state waste discharge permits, all held by DOE, were in effect during 2015: ST-4500, ST0004502, ST0004511, and ST0045514. Ecology's wastewater discharge permits page is located at http://www.ecy.wa.gov/programs/nwp/permitting/wwd/index.html.

Two Ecology general permits for sand and gravel were in effect (and issued to Bechtel National Inc.) during 2015: WAG-50-5180 and WAG-50-5181. WDOH issues annual permits to DOE to operate Hanford Site on-site sewage systems, which include some holding-tank sewage systems. Most on-site sewage systems (septic systems) operate under permits issued by the WDOH.

2.4.3 Local Discharge Permit – Discharges to the City of Richland Sewer

The City of Richland regulates industrial wastewater discharges to its sewer collection system in accordance with City of Richland Code Chapter 17.30, *Richland Pretreatment Act*. DOE holds Permit No. CR-IU010, which allows discharges from the 300 Area facilities.

2.4.4 Safe Drinking Water Act of 1974 (SDWA)

BR Stenson

The *Safe Drinking Water Act of 1974* (SDWA; 42 U.S.C. 300f) established a cooperative program among local, state, and federal agencies to institute drinking water regulations applicable to all public water systems in the United States. States were granted primary responsibility (known as primacy) for administering and enforcing the SDWA. To obtain primacy, states were required to meet certain criteria, including adoption of regulations equal to or more stringent than EPA regulations.

Washington State was awarded primacy in 1978; the State Board of Health and WDOH became partners in developing and enforcing state drinking water regulations. Hanford Site water systems were designated as public in 1986 and became formally registered as public under WDOH jurisdiction in 1987.

The SDWA was amended in 1986 and 1996 (*Safe Drinking Water Act Amendments*; Public Law 104-182). Although 1986 amendments included provisions that emphasized treatment to ensure safe drinking water, 1996 amendments focused on source water protection, water system improvements funding, operator training, public information, and strengthening EPA's scientific work, including a risk and cost benefit analysis in establishing drinking water standards (DWS). Between 1975 and 2006, these amendments resulted in the development of 18 new drinking water regulations. Post-1996 regulations have included more complex compliance determinations and more advanced treatment technologies. Based on site-specific conditions, many public water systems are either using or investigating new treatment technologies to comply with the increasingly complex requirements.

The EPA's microbial and disinfection byproduct rules include nine drinking water regulations, address acute threats from microbial contamination and chronic threats from disinfectant residuals and disinfection byproducts. These rules limit disinfectant residuals and disinfection byproducts in the distribution systems while improving particle removal in the drinking water treatment plants. In 2015, affected Hanford Site water systems demonstrated compliance with the filtration and disinfection treatment technique requirements and limits for disinfectant residuals and disinfection byproducts.

To protect worker health using public water supplies on the Hanford Site, water systems were monitored during 2015 for microbiological, chemical, physical, and radiological constituents. There were no microbiological detections during the 2015 monitoring cycle, and all chemical concentrations in drinking water were well below the maximum contaminant levels established by EPA. Table 2.6 provides selected drinking water standards. System-specific information and analytical results for 2015 radiological monitoring are summarized in Section 7.1.3. Table 2.7 provides the selected surface freshwater quality criteria for toxic pollutants, and Table 2.8 provides the Washington State water quality criteria for the Hanford Reach of the Columbia River.

Table 2.6. Selected Drinking Water Standards

Constituent	DWS*		Agency†
Antimony	6 µg/L	0.006 ppm	EPA, WDOH
Arsenic	10 µg/L	0.01 ppm	EPA, WDOH
Barium	2,000 µg/L	2 ppm	EPA, WDOH
Cadmium	5 µg/L	0.005 ppm	EPA
Carbon tetrachloride	5 µg/L	0.005 ppm	EPA, WDOH
Trihalomethanes‡	80 µg/L	0.08 ppm	EPA
Chromium	100 µg/L	0.1 ppm	EPA, WDOH
cis-1,2-Dichloroethene	70 µg/L	0.07 ppm	EPA, WDOH
Copper	1,300 µg/L	1.3 ppm	EPA
Cyanide	200 µg/L	0.2 ppm	EPA, WDOH
Fluoride	4 mg/L	4 ppm	EPA, WDOH
Lead	15 µg/L	0.015 ppm	EPA
Mercury (inorganic)	2 µg/L	0.002 ppm	EPA, WDOH
Methylene chloride	5 µg/L	0.005 ppm	EPA, WDOH
Nitrate, as NO_3^-	10 mg/L	10 ppm	EPA, WDOH
Nitrite, as NO_2^-	1.0	1.0 ppm	EPA, WDOH
Selenium	50 µg/L	0.05 ppm	EPA, WDOH
Tetrachloroethene	5 µg/L	0.005 ppm	EPA, WDOH
Thallium	2 µg/L	0.002 ppm	EPA, WDOH
Trichloroethene	5 µg/L	0.005 ppm	EPA, WDOH
Antimony-125	300 pi/L§	11.1 Bq/L	EPA
Beta particle and photon activity	4 mrem/yr**	40 µSv/yr	EPA, WDOH
Carbon-14	2,000 pCi/L§	74.1 Bq/L	EPA
Cesium-137	200 pCi/L§	7.4 Bq/L	EPA
Cobalt-60	100 pCi/L§	3.7 Bq/L	EPA
Iodine-129	1 pCi/L§	0.037 Bq/L	EPA
Ruthenium-106	30 pCi/L§	1.11 Bq/L	EPA
Strontium-90	8 pCi/L§	0.296 Bq/L	EPA, WDOH
Technetium-99	900 pCi/L§	33.3 Bq/L	EPA
Total alpha (excluding uranium)	15 pCi/L§	0.56 Bq/L	EPA, WDOH
Tritium	20,000 pCi/L§	740 Bq/L	EPA, WDOH
Uranium	30 µg/L	0.03 ppm	EPA, WDOH

Bq=Becquerel, L=liter, pCi=picocuries, mg=milligrams, ppm=parts per million, yr=year, µg=micrograms
*Maximum contaminant level for drinking water supplies.
†WDOH at WAC 246-290; EPA at 40 CFR 141, "National Primary Drinking Water Regulations;" 40 CFR 143, "National Secondary Drinking Water Regulations;" and *Drinking Water Regulations and Health Advisories* (EPA 1996).
‡Standard is for total trihalomethanes.
§EPA DWSs for radionuclides were derived based on a 4-mrem/yr dose standard using maximum permissible concentrations in water specified in *National Bureau of Standards Handbook 69* (U.S. Department of Commerce 1963, as amended).
**Beta and gamma radioactivity from anthropogenic radionuclides. Annual average concentration shall not produce an annual dose from anthropogenic radionuclides equivalent to the total body or any internal organ dose >4 mrem/yr. If two or more radionuclides are present, the sum of their annual dose equivalents shall not exceed 4 mrem/yr. Compliance may be assumed if annual average concentrations of total beta, tritium, and strontium-90 are <50, 20,000, and 8 pCi/L, respectively.

Table 2.7. Selected Surface Freshwater Quality Criteria for Toxic Pollutants

Compound	Level that Yields Acute Toxicity*		Level that Yields Chronic Toxicity*		Protective Level for Human Health Consumption of Water and Organisms†	
	µg/L	ppm	µg/L	ppm	µg/L	ppm
Dissolved Metals						
Antimony	–	–	–	–	14	0.014
Arsenic	360.0	0.360	190.0	0.19	0.018	0.000018
Cadmium	1.6	0.0016‡	0.59	0.00059§	–	–
Chromium (VI)	15	0.015	10	0.01	–	–
Copper	8.4	0.0084**	6.0	0.006††	–	–
Lead	28	0.028‡‡	1.1	0.0011§§	–	–
Mercury	2.1	0.0021	–	–	0.14	0.00014
Nickel	750	0.75***	83	0.083†††	610	0.61
Silver	0.94	0.00094‡‡‡	–	–	–	–
Thallium	–	–	–	–	1.7	0.0017
Zinc	60	0.060§§§	55	0.055****	–	–
Total Recoverable Metals						
Chromium(III)††††	300	0.30‡‡‡‡	96	0.096§§§§	–	–
Mercury	–	–	0.012	0.000012	–	–
Selenium	20	0.02	5.0	0.005	–	–
Anions						
Cyanide*****	22.0	0.022	5.2	0.0052	700	0.70
Chloride†††††	860,000	860	230,000	230	–	–
Organic Compounds						
Benzene	–	–	–	–	1.2	0.0012
Carbon tetrachloride	–	–	–	–	0.25	0.00025
Chloroform	–	–	–	–	5.7	0.0057
1,2-Dichloroethane	–	–	–	–	0.38	0.00038
Methylene chloride	–	–	–	–	4.7	0.0047
Toluene	–	–	–	–	6,800	6.80
Tetrachloroethene	–	–	–	–	0.8	0.0008
1,1,2-Trichloroethane	–	–	–	–	0.60	0.0006
Trichloroethene	–	–	–	–	2.7	0.0027
Vinyl chloride	–	–	–	–	2	0.002
1,4-Dichlorobenzene	–	–	–	–	400	0.40

*WAC 173-201A-240, "Toxic Substances." For hardness-dependent criteria, a minimum value of 47 mg $CaCO_3$/L for 1992–2010 USGS water samples collected near Vernita Bridge is used. Ppm values equivalent to reported µg/L concentrations are shown.

†40 CFR 131.36, "Toxics Criteria for those States not Complying with Clean Water Act Section 303(c)(2)(B)"

‡(1.1367 - [ln(hardness)] 0.04184) exp (1.128[ln(hardness)] -3.828) Hardness expressed as mg $CaCO_3$/L

§(1.1017 - [ln(hardness)] 0.04184) exp (0.7852[ln(hardness)] -3.490)

**(0.960) exp (0.9422[ln(hardness)]-1.464)

††(0.960) exp (0.8545[ln (hardness)]-1.465)

‡‡(1.4620 - [ln (hardness)] 0.1457) exp (1.273[ln (hardness)]-1.460)

§§(1.4620 - [ln (hardness)] 0.1457) exp (1.273[ln (hardness)] -4.705)

***(0.998) exp (0.8460 [ln (hardness)]+3.3612)

†††(0.997) exp (0.8460 [ln (hardness)]+1.1645)

‡‡‡(0.85) exp (1.72[ln (hardness)]-6.52)

§§§(0.978) exp (0.8473 [ln (hardness)]+0.8604)

****(0.986) exp (0.8473 [ln (hardness)]+0.7614)

††††Where methods to measure trivalent chromium are unavailable, these criteria are to be represented by total recoverable chromium.

‡‡‡‡(0.316) exp (0.8190 [ln(hardness)]+3.688).

§§§§(0.860) exp (0.8190 [ln(hardness)]+1.561).

*****Criteria based on weak and dissociable method.

†††††Dissolved in association with sodium.

Table 2.8. Washington State Water Quality Criteria for the Columbia River, Hanford Reach*

Parameter	Permissible Levels
Fecal coliform	• Geometric mean value less than or equal to 100 colonies/0.026 gal (100 mL) • Not ≥10% of samples may exceed the geometric mean value of 200 colonies/0.026 gal (100 mL).
Dissolved oxygen	>8 mg/L (8 ppm)
Temperature	• Less than or equal to 18°C (64°F) as a result of human activities • When natural conditions exceed 18°C (64°F), no temperature increases will be allowed that will raise the temperature of the receiving water by more than 0.54°F (0.3°C). • Incremental temperature increases resulting from point sources shall not at any time exceed t=28/(T+7), where t=maximum permissible temperature increase measured at a mixing zone boundary and T=background temperature. Incremental temperature increases resulting from non-point sources shall not exceed 5.04°F (2.8°C).
pH	6.5 to 8.5 range; less than 0.5 unit induced variation
Turbidity	Turbidity shall be ≤5 nephelometric turbidity units over background turbidity when 50 nephelometric units or fewer and shall not increase >10% when background turbidity is >50 nephelometric units
Aesthetic value	Shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.
Radioactive substances	Deleterious concentrations of radioactive materials for all classes shall be as determined by the lowest practicable level attainable and in no case shall exceed 1/12.5 of the values listed in WAC 246-221-290 or exceed EPA drinking water regulations for radionuclides, as published in the *National Interim Primary Drinking Water Regulations* (EPA 1975) or in subsequent revisions thereto (Table 2.1).
Toxic substances	Shall not be introduced above natural background levels in waters of the state that have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent on those waters, or adversely affect public health, as determined by the department (Table 2.8).

*WAC 173-201A, "Water Quality Standards for Surface Waters of the State of Washington"

2.5 Natural and Cultural Resources

This section provides information on federal statutes and assessments related to ecological and cultural resource compliance at the Hanford Site.

2.5.1 Ecological Compliance

JA Pottmeyer

DOE policies require that all Hanford Site projects with the potential to affect biological resources adversely conduct an ecological compliance review before the project starts. DOE uses the review to determine if the project will comply with the *Endangered Species Act of 1973* (16 U.S.C. 1531), the *Migratory Bird Treaty Act of 1918* (MBTA; 16 U.S.C. 703), and the *Bald and Golden Eagle Protection Act* (16 U.S.C. 668–668c) as well as Executive Order 11988, "Floodplain Management" (32 CFR 644.320) and Executive Order 11990, "Protection of Wetlands" (32 CFR 644.319). The review also addresses whether other significant resources such as Washington State-listed species of concern, wetlands, and native shrub-steppe habitats are adequately considered during the project planning process. When adverse effects are identified, mitigation actions are prescribed. Mitigation actions may include avoidance of significant resources, minimization of effects, and rectification or compensation if resources are affected.

There were 188 ecological compliance reviews performed during 2015, including 155 reviews to support general Hanford Site activities and 33 reviews for River Corridor environmental restoration activities. By comparison, 212 ecological compliance reviews were performed in 2014, including 125 reviews to support general Hanford Site activities and 87 reviews for River Corridor environmental restoration activities.

2.5.1.1 *Endangered Species Act of 1973* (16 U.S.C. 1531)

Several protected species of plants and animals exist on the Hanford Site and along the Hanford Reach of the Columbia River. Upper Columbia River Steelhead trout (*Oncorhynchus mykiss*) and spring-run Chinook salmon (*Oncorhynchus tshawytscha*) are listed under the *Endangered Species Act of 1973* (16 U.S.C. 1531) as either threatened or endangered (50 CFR 17, "Endangered and Threatened Wildlife and Plants," Subpart B, "Lists") and occur on site. Critical habitat for these species has been designated within the Hanford Reach. The *Threatened and Endangered Species Management Plan: Salmon and Steelhead* (DOE/RL-2000-27) is in place for these species. The bull trout (*Salvelinus confluentus*) is also listed under 16 U.S.C. 1531 and may occasionally occur in the Hanford Reach; critical habitat for bull trout was designated in the Hanford Reach in 2010 (USFWS 2010). Two plant species, the Umtanum desert buckwheat (*Eriogonum codium*) and White Bluffs bladderpod (*Physaria douglasii* ssp. *tupleshensis*) are now listed under 16 U.S.C. 1531. Other species on the Hanford Site are listed by the WDFW as endangered, threatened, or sensitive (see Section 11.2).

2.5.1.2 *Migratory Bird Treaty Act* (16 U.S.C. 703)

The MBTA prohibits taking or disturbing listed migratory birds or their feathers, eggs, or nests. Over 100 species of birds that regularly occur on the Hanford Site are protected under this Act. All Hanford Site projects with a potential to affect federal or state-listed species of concern complied with the requirements of this Act by using the ecological compliance review process as described in the *Hanford Site Biological Resource Management Plan* (DOE/RL-96-32). When applicable, ecological reviews produce recommendations to minimize adverse impacts to migratory birds, such as performing work outside of the nesting season and minimizing the loss of habitat. Hanford Site biologists maintain migratory bird permits issued by the USFWS (MB14155A-2 and MB81249A-1) that allow for certain MBTA-related actions. A report of all activities conducted under this permit is provided to USFWS annually.

2.5.1.3 *Bald and Golden Eagle Protection Act* (16 U.S.C. 668)

16 U.S.C. 668 provides for the protection of the bald eagle and golden eagle by prohibiting, except under certain specified conditions, the taking, possession, or commerce of such birds. A revised *Bald Eagle Management Plan for the Hanford Site, South Central Washington* (DOE/RL-94-150) was published in 2013 to direct Hanford Site activities in accordance with current federal and state regulations and guidelines. This management plan outlines seasonal access restrictions around documented nesting and communal roosting sites at the Hanford Site between November 15 and March 15, and establishes guidelines for the protection of perches, roosts, and alternative nest sites. When applicable, ecological reviews have produced recommendations to minimize adverse impacts to bald eagles, including performing work outside of the winter season; staying out of established buffer areas; or entering buffer areas at mid-day, minimizing impacts by avoiding eagle roosting periods.

DOE continued to maintain a bald eagle take permit from the USFWS (MB30480-A-1) to cover potential disturbance to eagles using the night roosts in the vicinity of the 100 HX pump-and-treat system between 100-H and 100-D Areas.

2.5.1.4 Executive Orders 11988 and 11990

Executive Order 11988 and Executive Order 11990 and require federal agencies to minimize the loss or degradation of wetlands on federal lands, and account for floodplain management when developing water-

and land-use plans, respectively. DOE implements the requirements of these two executive orders through 10 CFR 1022, "Compliance with Floodplain and Wetlands Environmental Review Requirements." It is DOE policy to 1) restore and preserve natural and beneficial values served by floodplains; 2) minimize the destruction, loss, or degradation of wetlands; and 3) preserve and enhance the natural and beneficial value of wetlands. Compliance with these executive orders, as well as the wetland provisions of the *Clean Water Act of 1977* (33 U.S.C. 1251), are implemented at the Hanford Site through the ecological compliance review process in conjunction with the appropriate site environmental compliance officers. The compliance process includes the identification, protection, and when necessary, mitigation of wetlands and floodplains on the Hanford Site.

2.5.2 Cultural Resource Compliance

CD Currie

The *Department of Energy Management of Cultural Resources* (DOE P 141.1) requires compliance with cultural resource-related laws and regulations to include the *Antiquities Act of 1906* (16 U.S.C. 433), *Historic Sites Act of 1935* (16 U.S.C. 461), *National Historic Preservation Act of 1966* (16 U.S.C. 470), NEPA (42 U.S.C. 4321 et seq.), *Archaeological and Historic Preservation Act of 1974* (16 U.S.C. 469), *American Indian Religious Freedom Act of 1978* (42 U.S.C. 1996), *Archaeological Resources Protection Act of 1979* (16 U.S.C. 470), and *Native American Graves Protection and Repatriation Act* (Public Law 101-601).

Regulations applicable to cultural resources include 36 CFR 60, "National Register of Historic Places;" 36 CFR 63, "Determinations of Eligibility for Inclusion in the National Register of Historic Places;" 36 CFR 65, "National Historic Landmarks Program;" 36 CFR 79, "Curation of Federally-Owned and Administered Archaeological Collections;" 36 CFR 800, "Protection of Historic Properties;" 43 CFR 7, "Protection of Archaeological Resources;" and 43 CFR 10, "Native American Graves Protection and Repatriation and Regulations."

Executive orders applicable to cultural resources include Executive Order 11593, "Protection and Enhancement of the Cultural Environment" (36 FR 8921); Executive Order 13007, "Indian Sacred Sites" (61 FR 26771); Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249); Executive Order 13287, "Preserve America" (68 FR 10635); and Presidential Proclamation 7319, *Establishment of the Hanford Reach National Monument* (65 FR 37253). Refer to Section 11.3 for details regarding Hanford Site Cultural Resource programs.

2.6 Sustainability Statutes

Information regarding additional statutes is presented in the following sections.

2.6.1 Chemical Management Systems

ML Hermanson

Hanford Site contractors developed and documented formal systems to manage chemicals. Chemical management systems apply to the acquisition, use, storage, transportation, and final disposition of chemicals, including hazardous chemicals as defined in 29 CFR 1910, "Occupational Safety and Health Standards," Subpart Z, "Toxic and Hazardous Substances." Chemical management systems are reviewed periodically, and improvements are made as needed.

2.6.2 Pollution Prevention Program (42 U.S.C. 133)

SW Davis

The *Pollution Prevention Act of 1990* (42 U.S.C. 133) requires that pollution be prevented or reduced at the source whenever possible, and pollution that cannot be prevented be recycled or treated in an environmentally safe manner. The Hanford Site Pollution Prevention Program was created to address these requirements. DOE is responsible for the Hanford Site Pollution Prevention Program and provides program implementation guidance to Hanford Site contractors. The Pollution Prevention Program reflects federal and DOE policies to reduce, reuse, and/or recycle wastes, as established by 42 U.S.C. 133.

Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" (72 FR 3919); Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" (74 FR 52117); and DOE O 436.1, *Departmental Sustainability*, establish pollution prevention and environmental stewardship requirements. In accordance with these requirements, pollution prevention and waste minimization activities are documented, tracked, and reported. Table 2.9 summarizes Hanford Site pollution prevention and waste minimization quantities recycled in FY 2015.

Table 2.9. Recycle Quantities

Material	FY 2015 Total (MT)
Non-hazardous Solid Wastes	
Cardboard	76.03
CI Shredded Paper	505.64
Furniture	141.4
Plastic Bottles	31.92
Tires	44.28
Wood Pallets	41.88
Brass Metals	0.00
Ferrous Metal	146.47
Non-ferrous Metals	39.85
Software/Media	6.89
Aluminum Cans	805
MSA Zero Waste Picnic	0.002
WCH Scrap Metal	100.29
Subtotal	**1939.652**
Regulated Solid Wastes	
Aerosol Cans	0.00
Antifreeze	3.82
Antifreeze – Fleet	0
Ballasts	2.08
Batteries	4.05
Fluorescent Bulbs	5.26
Lamps	2.29
Lead Acid Batteries	15.35
Lead Acid Batteries (Fleet)	10.27
PCB Waste Oil <50ppm	0
Toner Cartridges	8.69
Used Engine Oils (Fleet)	18.79
Used Oil	25.3
WCH Cartridge	4.18
Subtotal	**100.08**
TOTAL	**2039.732**

2.6.2.1 Pollution Prevention and Waste Minimization Accomplishments and Awards

The Hanford Site did not receive any DOE, federal agency, state agency, or industry-sponsored awards for pollution prevention and waste minimization accomplishments in CY 2015.

2.6.2.2 Accomplishments

The Hanford Site has recycled 76% of non-hazardous solid waste and certain hazardous waste, excluding construction and demolition (C&D) debris. In 2015, 2,040 MT of non-hazardous (plastic, aluminum, cardboard, paper, wood, and metal) and hazardous (antifreeze, batteries, bulbs, and oils) wastes were recycled through Hanford Site programs administered through the Mission Support Contract. Along with material recycling and diversion, the site strives to reduce greenhouse gases (GHG) Scopes 1, 2 and 3. Emissions for FY 2015 decreased from FY 2014 largely due to a decrease in fleet diesel fuel use, with 71,050 MT of carbon dioxide equivalent (CO_2e) compared with 102,645 $MTCO_2e$ from the FY 2008 baseline and 78,690 $MTCO_2e$ reported for FY 2014. There was a 39% reduction in Scope 3 GHG emissions for the Hanford Site in FY 2015 from the FY 2008 baseline: emissions in FY 2015 were 25,312 $MTCO_2e$, whereas emissions in FY 2008 were 41,381 $MTCO_2e$. GHG emissions from employee commuting, business travel, off-site wastewater treatment, and contracted solid waste disposal are primarily dependent on work locations and the number of workers employed at the Hanford Site.

During 2015, contractors at the Hanford Site continued to divert C&D from landfill disposal. The Hanford Site diverted approximately 980% (1,902 MT) of C&D debris from the inert landfill, disposing 478.5 MT of debris to the landfill. Hanford continues to implement additional power management initiatives. There were several ongoing power management and other environmentally preferable initiatives throughout 2015, including the following:

- Thin Client (Zero Clients) implementation (replacing desktop computers with energy efficient Thin Clients). Implementation of the Thin Client (Zero Clients) and this category of products are not covered by ENERGY STAR™ or EPEAT, but have superior energy efficiency.
- Increased use of "Convenience Copiers" allowed for removal of standalone and network printers.
- 100% of the equipment on the Hanford Site is set to automatic duplexing, including printers, copiers, and multi-function devices.
- Over 717 computers, monitors, printer, televisions, and servers were recycled through a certified recycler.

2.6.3 Environmental Orders

CJ Clement, SW Davis

One DOE order and two Presidential Executive Orders addressing sustainability are complied with at the Hanford Site.

Executive Order 13423 established a policy for federal agencies to conduct legally, environmentally, economically, and fiscally sound environmental, transportation, and energy-related activities in an integrated, efficient, continuously improving, and sustainable manner. The order established goals for the following areas: improved energy efficiency; reduced greenhouse gas emissions; use of renewable energy sources; renewable energy generation; reduced water consumption; acquisition of bio based, environmentally preferable, energy-efficient, water-efficient, and recycled products; reduced use of toxic and hazardous chemicals and materials; increased waste minimization, prevention, and recycling; use of sustainable building practices; reduced use of

petroleum products for vehicles; and electronics stewardship. In addition, Executive Order 13423 requires that an Environmental Management System (EMS) be established as the mechanism for managing environmental goals, as well as other impacts to the environment from Hanford Site operations, and establishing environmental objectives and targets. The order also requires establishing environmental management training, environmental compliance review and auditing, and leadership awards to recognize outstanding environmental, energy, or transportation management performance.

Executive Order 13514 states that federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and storm water management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies and environmentally preferable materials, products, and services; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; strengthen the vitality and livability of the communities in which federal facilities are located; and inform federal employees about and involve them in the achievement of these goals. In addition, Executive Order 13514 requires that targets for baseline Scope 1 (generated from site operations and activities) and Scope 2 (associated with the purchase of energy [electricity, heat, or steam] used by site contractors) greenhouse gas emissions, along with 2020 reduction targets, be established.

Similar numbers for Scope 3 (emissions associated with ancillary activities related to Hanford Site operations, including business travel, employee commuting, vendor activities, delivery services) emissions must be established. Executive Order 13514 also sets goals for improved water use efficiency and management, promotion of pollution prevention and waste elimination, advancement of regional and local integrated planning, implementation of sustainable building lifecycle management practices, advancement of sustainable acquisition, and promotion of electronics stewardship. Executive Order 13514 requires continued implementation of a formal sustainable EMS.

DOE O 436.1 requires developing a Site Sustainability Plan integrated with the Hanford Site operational plans. In addition, the order requires developing an EMS certified to or conforms with the ISO 14001:2004 standard, submittal of sustainability goal data and reports as well as EPCRA reporting. Implementation of DOE orders and executive orders by Hanford Site contractors is addressed in Section 3.0.

As the Hanford Site services and infrastructure contractor, MSA updated the sustainability plan for the Hanford Site in 2015 with input from DOE and Hanford Site contractors. The plan describes the energy management program and identifies planned energy efficiency, water conservation, transportation fleet management, and sustainable buildings activities, as required by DOE O 436.1. Environmental objectives developed in 2010 were maintained in 2015, as were plans for recycling, environmentally preferred procurement management, and electronic asset stewardship (see Section 3.0).

2.7 Occurrence Reporting and Processing of Operations Information

TH Pysto

Releases of radioactive and regulated materials to the environment are reported to DOE and other federal and state agencies as required by law. The specific agencies notified depend on the type, amount, and location of each release event. This section addresses releases or potential releases to the environment that may not be documented by other reporting mechanisms during the reporting period. All Hanford Site

occurrences are reported to the Hanford Emergency Operations Center Shift Office and subsequently recorded in the Occurrence Reporting and Processing System. This system is a DOE electronic database that tracks occurrence reports across the DOE complex (DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*). The following sections summarize occurrences that may have impacted the Hanford Site environment in 2015. The occurrences are arranged according to significance category, which are assigned based on the nature and severity of the occurrence. The categories include Operational Emergency; Recurring; or Category 1 (significant impact), Category 2 (moderate impact), Category 3 (minor impact), and Category 4 (some impact).

2.7.1 Operational Emergency; Recurring; or Category 1

There were no Hanford Site environmental occurrences ranked as Operational Emergency, Recurring, or Category 1, Significant Impacts.

2.7.2 Operational Emergency; Recurring; or Category 2

There were no Hanford Site environmental occurrences ranked as Operational Emergency, Recurring, or Category 2, Moderate Impacts.

2.7.3 Operational Emergency; Recurring; or Category 3

There were no Hanford Site environmental occurrences ranked as Operational Emergency, Recurring, or Category 3, Minor Impacts.

2.7.4 Operational Emergency; Recurring; or Category 4

Category 4 occurrences are defined as having some impact on safe facility operations, worker or public safety and health, regulatory compliance, or public and business interests. Summarized below is a Category 4 occurrence with potential environmental implications that occurred on the Hanford Site during the reporting period, and the discoveries of legacy contamination.

Discovery of Legacy Contamination. Each year on the Hanford Site, legacy contamination is spread from environmental conditions. Some contamination is discovered during routine survey work. Biological vectors also spread contamination; tumbleweeds, rodents, and birds are all common biological vectors. Tumbleweeds have a deep taproot that can sequester contamination from below the soil surface into the plant body on the surface. Rodents eat vegetation located in contaminated areas and deposit contaminated feces outside of the contaminated area. Birds build nests and occasionally use materials from contaminated areas, resulting in contamination transfer to uncontaminated areas. Of these three biological vectors, contaminated tumbleweeds occur most frequently and have the potential to transfer contamination the farthest distance from the original locations. High winds may contribute to the spread of legacy contamination beyond posted areas. Reports of legacy contamination that are discovered throughout the year are consolidated into quarterly reports. In 2015, there were 46 documented occurrences of legacy contamination.

2.8 Standards and Permits

JK Perry, RA Kaldor, M Kamberg, JW Wilde

Hanford Site operations must conform to a variety of government standards and permits. The primary environmental quality standards and permits applicable to Hanford Site operations are listed in Table 2.10.

Table 2.10. Environmental Permits

Dangerous Waste Permit (RCRA)
Hanford Facility RCRA Permit (WA7890008967) was issued on September 27, 1994 and has undergone several revisions. The permit expired on September 27, 2004; however, Permit WA7890008967, Rev. 8C remains in effect until a new permit is issued. Ecology issued a draft permit for public review and comment, from May 1, 2012 through October 22, 2012 (Ecology 2012). Ecology received more than 4,000 comments on the draft permit, including approximately 1,800 comments from the public and 3,000 comments from the DOE. Because information and arguments brought up during the comment period raised substantial new questions, Ecology plans to revise the draft permit and reopen the comment period (see Section 2.1.2.1).
Air Permits
Hanford Site Air Operating Permit 00-05-006, Renewal 2, covers operations on the Hanford Site having a potential to emit airborne emissions. This permit was effective on April 1, 2013 and expires March 31, 2018. The permit is intended to provide a compilation of applicable *Clean Air Act* requirements for radioactive and non-radioactive emissions at the Hanford Site. It will be implemented through federal and state programs (see Section 2.3.2).
Radioactive Air Emissions License for the Department of Energy Richland Operations Office Hanford Site (License FF-01) is issued to RL by WDOH. This permit was effective February 23, 2012 and expires December 31, 2017. The FF-01 license is a compilation of all applicable radioactive air emission requirements.
Drinking Water Permits
ID# 00177 J is a permit to operate the 100-K Area drinking water system. WDOH issues the permit.
ID# 00100 4 is a permit to operate the 200-West Area drinking water system. WDOH issues the permit.
ID# 41840 8 is a permit to operate the 300 Area drinking water system. WDOH issues the permit.
ID# 41947 0 is a permit to operate the 400 Area drinking water system. WDOH issues the permit.
Wastewater Permits
Permit CR-IU010, 300 Area Industrial Wastewater Discharge Permit, is issued to RL by the City of Richland. Permit CR-IU010 governs the discharges from the 300 Area facilities into the City of Richland sewer collection system.
HAN002 through HAN075 permit on-site sewage systems to operate on the Hanford Site. WDOH issues these permits.
Permit ST-0004500, *State Waste Discharge Permit,* allows treated wastewater from the Effluent Treatment Facility to be discharged to the State-Approved Land Disposal Site. This permit is effective until December 31, 2019.
Permit ST0004502, *State Waste Discharge Permit,* allows treated effluent from the 200-East and 200-West Areas to be discharged to the 200 Area Treated Effluent Disposal Facility. This permit is effective until June 30, 2017.
Permit ST0004511 is a Categorical State Waste Discharge Permit that authorizes the discharge of wastewater from maintenance, construction, and hydro testing activities and allows for cooling water, condensate, and industrial storm water discharges at the Hanford Site. This permit was issued January 1, 2014 and expires February 16, 2019.
Permit ST0045514, *State Waste Discharge Permit,* is for the 200-West Area Evaporative Sewage Lagoon a domestic wastewater treatment facility located northeast of the 200-West Area. The facility consists of double-lined evaporative lagoons and is designed to have no liquid discharge to the ground. The system provides domestic wastewater treatment for the 200-West and 600 Areas, and treatment for domestic wastewater hauled from the 200-East Area and other locations within the site.
Permit WAG-50-5180, Washington State Sand and Gravel General Permit for the Concrete Batch Plant in the 200-East Area. The Concrete Batch Plant supports construction of WTP; its primary function is making concrete. The permit provides coverage for discharges of process water and storm water associated with Ready Mix Concrete operations. Bechtel National is the permit owner. This permit expired October 1, 2015; however, a renewal application was submitted allowing the permit to remain in effect through the remainder of 2015.
Permit WAG-50-5181, Washington State Sand and Gravel General Permit for Pit 30 Quarry in the 200-East Area. Ecology issued the permit to BNI as owner/operator. The Pit 30 Quarry supports the construction of the WTP, and the primary function is making construction sand and gravel. This permit expired October 1, 2015; however, a renewal application was submitted allowing the permit to remain in effect through the remainder of 2015.
Wildlife Permits
Permit MB60138B-1, Federal Fish and Wildlife Permit, issued by the U.S. Fish and Wildlife Service to DOE-RL, authorizes the collection of migratory birds for ecological monitoring, and danger to human safety and health including control of contamination. This permit expires March 31, 2018.

Table 2.10. Environmental Permits

Permit MB81249A-1, Federal Fish and Wildlife Permit, issued by the U.S. Fish and Wildlife Service to MSA, authorizes the collection of migratory birds for danger to human safety and health and the determination and control of contamination. This permit expired March 31, 2015.		
Review Reference Number 13260-2009-I-0121, Federal Fish and Wildlife Section 7 Review, issued to Environmental Assessment Services in July 2009, for the potential of incidental take of salmonids during fishing activities in the Columbia River. This review has no expiration listed.		
Review Reference Number 13260-2011-I-0080, Federal Fish and Wildlife Section 7 Review, issued to DOE in July 2011 for the potential of incidental take of bull trout during fishing activities in the Columbia River. This review has no expiration listed.		
Permit 15-221a, Scientific Collection Permit issued by WDFW to MSA for May 2015 through May 2016, authorizes food fish, shellfish, game fish, and wildlife collection for research purposes. This permit is renewed annually.		
Permit 14-151a, Scientific Collection Permit issued by WDFW to MSA for May 2014 through May 2015, authorizes the collection of food fish, shellfish, game fish, and wildlife for research purposes. This permit is renewed annually.		
Agency Contact Information		
State of Washington Department of Ecology P.O. Box 47600 Olympia, WA 98504-7600	U.S. Environmental Protection Agency Region 10 1200 Sixth Ave. Seattle, WA 98101	U.S. Department of Energy Richland Operations Office 825 Jadwin Ave. Richland, WA 99352
U.S. Fish and Wildlife Service Migratory Bird Permit Office 911 NE 11th Ave. Portland, OR 97232-4181	Washington State Department of Health P.O. Box 47890 Olympia, WA 98504-7890	

2.9 Environmental Noncompliance

JW Cammann

2.9.1 Regulatory Agencies

During CY 2015, there were 27 regulatory agency compliance actions filed against the DOE and its contractors for alleged violations of regulatory requirements (3 to WDOH, 19 to Ecology, and 5 to EPA Region 10) or other enforceable agreements. Fourteen of the 27 compliance actions resulted from regulatory agency inspections of DOE facilities on the Hanford Site (see Section 2.1.2.2). The compliance actions resulted in 54 concerns and 72 compliance actions that contributed to $169,722 in fines and penalties during CY 2015. Table 2.11 summarizes the alleged environmental noncompliances by program area. Table 2.12 summarizes the 27 alleged environmental noncompliances filed against the DOE and its contractors during CY 2015 including a description of the alleged noncompliances. Figure 2.1 shows alleged environmental noncompliance concerns, violations, and associated fines.

Table 2.11. Alleged Environmental Noncompliance Summary by Program Area, 2010–2015

Program Area	2010	2011	2012	2013	2014	2015
CAA	3	0	0	4	2	3
CWA	1	0	0	0	0	1
RCRA	3	1	2	4	7	16
CERCLA	0	0	3	1	0	0
Others	4	1	2	1	1	7
Total Notices of Violation	**11**	**2**	**7**	**10**	**10**	**27**

Table 2.12. Summary of Alleged Environmental Noncompliances for CY 2015

Agency	Doc Number	Title	Alleged Noncompliance Description
EPA	2016-06	DISPUTE RESOLUTION REGARDING DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-16-15-08	DOE-RL notification to EPA that TPA Milestone M-016-149, "Complete 100-IU-2/6 Interim Response Actions," due March 31, 2016, will be missed.
Ecology	2016-05	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT 241-CX TANK SYSTEM	Incomplete documentation of annual inspections of 241-CX Tank System; using initials rather than full name when signing inspection reports.
Ecology	2016-04	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT HEXONE STORAGE AND TREATMENT FACILITY	Time of annual facility inspection not documented on data sheets; some data sheets missing second page.
Ecology	2016-03	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT 400 AREA WASTE MANAGEMENT UNIT	Revise contingency plan and Fast Flux Test Facility building emergency plan to include location of emergency response and spill control equipment; inspection log deficiencies including times, signatures, and notation of problems/repairs.
Ecology	2016-02	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT SINGLE-SHELL TANK FARMS	Proper posting of signage on tank farm perimeter fencing to indicate hazard, incomplete dangerous waste inspection records, failure to remedy problems on inspection records, dangerous waste training plan deficiencies.
Ecology	2016-01	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT LOW-LEVEL BURIAL GROUND TRENCHES 31/34	Failure to perform dangerous waste inspections weekly; deficiencies in list of job titles in Dangerous Waste Training Plan; less than 90-day accumulation tank labeling deficiencies.
Ecology	2015-23	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT WASTE TREATMENT PLANT MATERIAL HANDLING FACILITY	Improper labeling of dangerous waste containers to indicate their contents and potential hazards.
Ecology	2015-22	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT OPERATION AND MAINTENANCE GROUNDWATER MONITORING WELLS	Operation and maintenance groundwater monitoring well violation of dangerous waste regulations including inspection reporting, groundwater sampling, calculation of critical means, groundwater monitoring plans and records.
WDOH	2015-21	NOTICE OF HIGH PRIORITY VIOLATIONS FOR 291-A-1 (PUREX), 296-B-1 (B-PLANT), AND 296-H-212 (CANISTER STORAGE BUILDING) EXHAUST STACKS	High priority violations associated with emission unit sampling and monitoring system operations.
Ecology	2015-20	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT WASTE RECEIVING AND PROCESSING FACILITY (WRAP)	WRAP Dangerous Waste Training Plan failing to include all personnel who prepare/maintain records, provide training, provide regulatory interpretations, are responsible for notifications, and perform emergency response.
Ecology	2015-19	DANGEROUS WASTE INSPECTION AT LOW-LEVEL BURIAL GROUND GREEN ISLANDS (LLBG-GI) AND NONRADIOACTIVE DANGEROUS WASTE LANDFILL (NRDWL)	NRDWL inspection records dated 1/6/2014, 4/2/2014, 7/8/2014, 10/6/2014, and 1/6/2015 did not include the time of the inspection. LLBG-GI indicated items needing repair; but, no details provided.
Ecology	2015-18	DISPUTE RESOLUTION REGARDING DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-45-15-03	Change control form modifies Milestone M-045-82 for submittal of complete permit modification requests for Tiers 1, 2, and 3 currently due September 30, 2015.
Ecology	2015-17	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT T-PLANT	Alleged violations of WAC 173-303 dangerous waste regulations for waste storage, employee training, and container labeling.
Ecology	2015-16	NOTICE OF HIGH PRIORITY VIOLATION FOR THE 222-SE ENGINE AT 222-S LABORATORY	Operation of the 222-SE Engine (located at the 222-S Laboratory) in excess of 100 hours in a calendar year.
WDOH	2015-15	NOTICE OF HIGH PRIORITY VIOLATION FOR THE 291-A-1 PUREX EXHAUST STACK	Operation of PUREX stack 291-A-1 (EU 369) without continuous sampling of stack emissions as required by the Air Operating Permit and Radioactive Air Emissions License (FF-01) due to a break in the sampling line.
Ecology	2015-14	DISPUTE RESOLUTION REGARDING DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-45-15-01	Initiation of dispute resolution under the TPA for Ecology's disapproval of TPA Change Form M-045-15-01.

Table 2.12. Summary of Alleged Environmental Noncompliances for CY 2015

Agency	Doc Number	Title	Alleged Noncompliance Description
Ecology	2015-13	NOTICE OF NON-COMPLIANCE WITH DANGEROUS WASTE REGULATIONS AT 207-A SOUTH RETENTION BASIN	Inadequate inspection procedures, incomplete inspection records, insufficient corrective actions to remedy problems discovered during inspections.
WDOH	2015-12	AS LOW AS REASONABLY ACHIEVABLE CONTROL TECHNOLOGY DEMONSTRATION FOR MANAGEMENT OF HEPA FILTERS	HEPA filters in service exceeding 10-year lifetime.
EPA	2015-11	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT THE CENTRAL WASTE COMPLEX, CENTRALIZED CONSOLIDATION/ RECYCLE CENTER, AND MIXED WASTE TRENCHES 31 AND 34	Compliance with dangerous waste permit, dangerous waste generator standards, universal waste management standards, and used oil management standards.
Ecology	2015-10	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT B-PLANT	Inadequate waste designation, improper emergency equipment per building emergency plan, need to update building emergency plan, improper tank labeling, closure plan for 221-B, tank inspections, inaccurate LDR reports.
Ecology	2015-09	NOTICE OF VIOLATION OF WASTEWATER DISCHARGE PERMIT REQUIREMENTS AT MO-234 DURING POTABLE WATER LINE BREAK	Failure to notify Ecology of a noncompliance with ST 4511 permit and failure to identify and report correctly an unauthorized discharge covered by the ST 4511 permit.
Ecology	2015-08	DISPUTE RESOLUTION ON DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-62-14-02	Initiation of dispute resolution under the TPA for Ecology's disapproval of TPA Change Form M-62-14-02.
Ecology	2015-07	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT THE 331 BUILDING AND 350 COMPLEX	Hazardous waste manifest deficiencies, dangerous waste training plan deficiencies, container labeling deficiencies, and container inspection deficiencies.
Ecology	2015-06	NOTICE OF VIOLATION OF DANGEROUS WASTE REGULATIONS AT TRENCH 94 AND CENTRAL WASTE COMPLEX OPERATING UNIT GROUP 6	Dangerous Waste Training Plan deficiencies, Contingency Plan not maintained on site, Building Emergency Director not on site.
EPA	2015-05	CONSENT AGREEMENT AND FINAL ORDER FOR DANGEROUS WASTE REGULATION VIOLATIONS AT EFFLUENT TREATMENT FACILITY/LIQUID EFFLUENT TREATMENT FACILITY (ETF/LERF) AND INADEQUATE CLOSURE PLANS	Inadequate closure plan for eight treatment, storage, and disposal (TSD) units per WAC 173-303-610; noncompliant storage of drummed dangerous waste at ETF/LERF.
EPA	2015-04	DISPUTE RESOLUTION ON DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-16-14-04	Inability to meet TPA milestone M-016-173, "Select Sludge Treatment and Packaging Technology and Propose New Interim Sludge Treatment and Packaging Milestones" by March 31, 2015 due to funding uncertainties.
EPA	2015-03	DISPUTE RESOLUTION ON DISAPPROVAL OF TRI-PARTY AGREEMENT CHANGE CONTROL FORM M-16-13-04	Inability to meet TPA milestone M-016-149 for remediation of several waste sites by 3/31/2015 due to NHPA Section 106 consultations, discovery of unanticipated materials, and associated safety concerns.

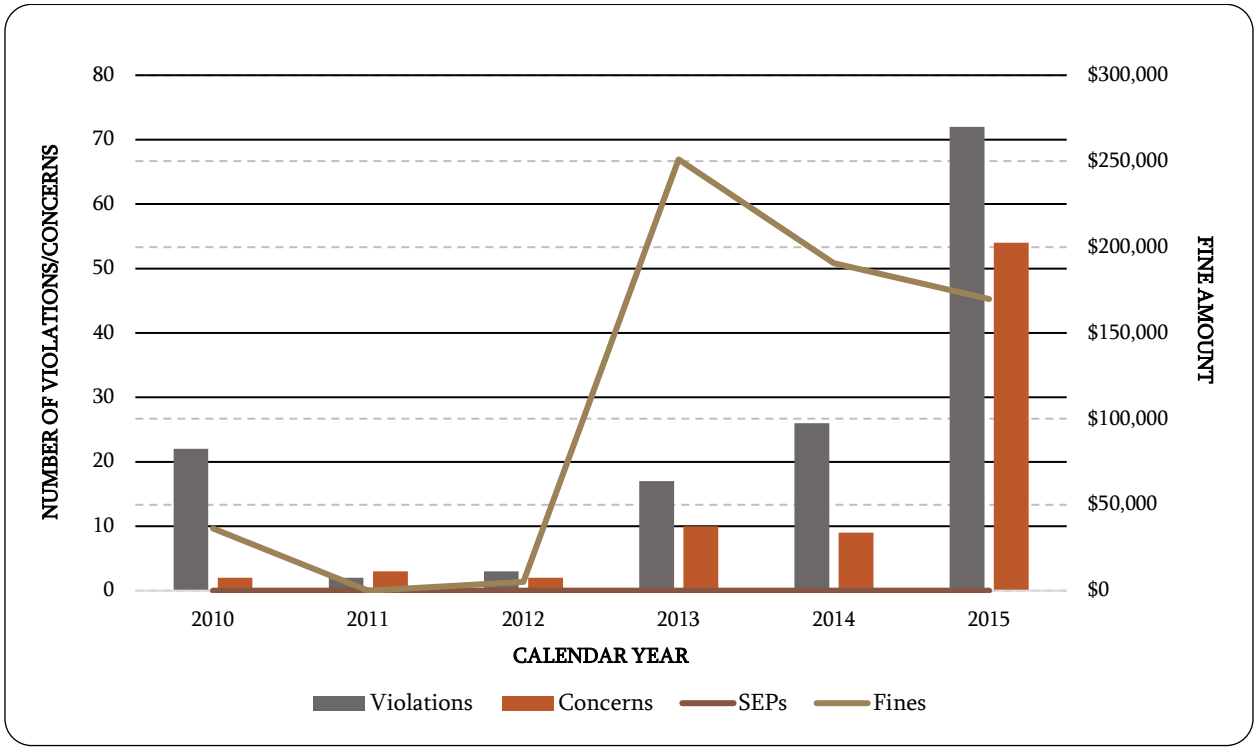

Figure 2.1. Alleged Environmental Noncompliance Violations, Concerns, and Associated Fines Summary
SEPs = Supplemental environmental projects performed to benefit the local community in lieu of a penalty payment

To avoid litigation expense and to settle administrative or judicial claims or causes of action a regulatory agency may have against them, DOE and its contractors, without admitting fault or liability, may enter into Agreed Orders and other negotiated regulatory agreements to resolve regulatory agency allegations asserted therein. Nothing in the agreements or in the execution and implementation of the terms and conditions of the agreements shall be taken as an admission of liability by DOE and its contractors, and DOE and its contractors neither admit nor deny the specific factual allegations contained therein. Regulatory agencies progress through a variety of tools to gain compliance, usually starting with a warning letter or letter of noncompliance. If the warning does not result in compliance, then enforcement actions can escalate to notices, orders, or civil penalties issued by the Washington State Attorney General. Although DOE and its contractors may receive warning letters from regulatory agencies, such letters do not constitute formal enforcement actions represented by notices, orders, or civil penalties issued by the Washington State Attorney General that may be appealed.

2.9.2 Waste Water Permit Deviations

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During CY 2015, 20 wastewater permit deviations were reported as indicated in Table 2.13.

Table 2.13. CY 2015 Wastewater Permit Deviations

Date	Permit Number Deviated	Reported to	Reason(s)
January 11	ST0004502	Ecology	Leaking valve on the TEDF line at manhole TL-2
January 13	ST0004511	Ecology	Water leak in a caisson
January 29	ST0004502	Ecology	Two leaking valves on the TEDF line at manholes TL-1 and TL-6
January 29	ST0004500	Ecology	Leak on the SALDS line at manhole ETF-06
February 6	ST0004511	Ecology	Water leak caused by a stuck flushing valve
April 7	ST0004511	Ecology	Failing to follow applicable best management practices identified in permit condition S4.A.2 for a potable water tank leak at MO-098
April 8	ST0004502	Ecology	Minor leaks from the air vacuum relief valves
April 13	ST0004511	Ecology	Water leak near Building 2220E
April 16	ST0004502	Ecology	Leak from a blind flange connection
April 23	ST0004511	Ecology	Water overflow at the 283-WD facility
May 7	ST0004511	Ecology	Nine (9) permit deviations via letter for water line leaks that occurred during CYs 2013 and 2014
May 13	ST0004511	Ecology	Failing to follow applicable best management practices identified in permit conditions S4.A.2 and S4.A.4 for a chiller flush discharge at 222-S
July 11	ST0004511	Ecology	Water line leak near the 300 Area fire station
July 13	300 Area Combined Sewer Permit CR-IU010	City of Richland	Low pH not sampled within required time frame
August 18	ST0004502	Ecology	Chloroform effluent limit exceedance
September 23	ST0004511	Ecology	Water discharges from mobile car wash
October 14	HAN071	WDOH	Release of sewage to the ground at lift station 2607-E6
October 30	HAN049	WDOH	Release of sewage to the ground at lift station 2607-W1
November 10	HAN047	WDOH	Release of sewage to the ground at lift station 2607-W1
December 3	ST0004511	Ecology	Failing to follow applicable best management practices identified in permit condition S4.A.2 for leak from a break in chiller potable water feed line at 222-S
December 15	ST0004511	Ecology	Discharging water within 300 feet of a Waste Information Data System site