

2. Compliance Summary

Lawrence Livermore National Laboratory (LLNL) activities comply with federal, state, and local environmental regulations, internal requirements, Executive Orders, and U.S. Department of Energy (DOE) Orders as specified in Contract DE-AC52-07NA27344. This chapter provides an overview of LLNL's compliance programs and activities during 2015, as well as a listing of all active environmental permits.

2.1 Environmental Restoration and Waste Management

2.1.1 Comprehensive Environmental Response, Compensation and Liability Act

Ongoing remedial investigations and cleanup activities for legacy contamination of environmental media at LLNL fall under the jurisdiction of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Title I of the Superfund Amendments and Reauthorization Act (SARA). CERCLA is commonly referred to as the Superfund law.

CERCLA compliance activities for the Livermore Site and Site 300 are summarized in **Sections 2.1.1.1** and **2.1.1.2**. Community relations activities conducted by DOE/LLNL are also part of these projects. See **Chapter 7** for more information on the activities and findings of the investigations.

2.1.1.1 Livermore Site Ground Water Project

The Livermore Site came under CERCLA in 1987 when it was placed on the National Priorities List. The Livermore Site Ground Water Project (GWP) complies with provisions specified in a Federal Facility Agreement (FFA) entered into by the U.S. Environmental Protection Agency (EPA), DOE, the California EPA's Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). As required by the FFA, the GWP addresses compliance issues by investigating potential contamination source areas (e.g., suspected old release sites, solvent-handling areas, leaking underground tank systems), monitoring water quality through an extensive network of wells, and remediating contaminated soil and groundwater. The primary soil and groundwater contaminants (constituents of concern) are common volatile organic compounds (VOCs), primarily trichloroethylene (TCE) and perchloroethylene (PCE). Background information on LLNL Livermore Site environmental characterization and restoration activities are presented in the *CERCLA Remedial Investigation Report for the LLNL Livermore Site* (Thorpe et al. 1990). The *LLNL Ground Water Project 2015 Annual Report* (McKereghan et al. 2016) presents the current status of clean up at the Livermore Site.

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Regulatory Milestones. In calendar year 2015, the following deliverables were submitted to the regulatory agencies:

- Fourth Quarter 2014 Self-Monitoring Report
- 2014 LLNL Ground Water Project Annual Report
- First, Second, and Third Quarter 2015 Self-Monitoring Report
- Work Plans for Well Drilling at Site 200 in Fiscal Year 2015

Treatment Facilities. During 2015, the Livermore GWP maintained 28 groundwater and 9 soil vapor treatment facilities. The groundwater extraction wells and dual phase extraction wells extracted about 973 million L of groundwater during 2015. The dual-phase extraction wells and soil-vapor extraction wells together removed 1.6 million m³ of soil vapor.

In 2015, the Livermore GWP treatment facilities removed about 51 kg of VOCs. Since remediation efforts began in 1989, more than 20.8 billion L of groundwater and approximately 20.1 million m³ of soil vapor have been treated, removing about 3,122 kg of VOCs.

Livermore Site restoration activities in 2015 were focused on enhancing and optimizing ongoing operations at treatment facilities. Evaluation of technologies that may accelerate cleanup of the Livermore Site contaminant source areas and address areas of co-mingled VOC and low-level tritium plumes, also continued. Beneath the site, groundwater concentration and hydraulic data indicate subtle but consistent declines in VOC concentrations and areal extent of contaminant plumes in 2015. Hydraulic containment along the western and southern boundaries of the site was fully maintained in 2015, and progress was made toward interior plume and source area clean up. See McKereghan et al. (2016) for more information.

Community Relations. Livermore Site community relations activities in 2015 included maintenance of information repositories and an administrative record; and disseminating environment-related news releases and internal/external newsletter articles, and responding to journalists' inquiries regarding the Livermore Site environmental cleanup; and a meeting with members of Tri-Valley Communities Against a Radioactive Environment (Tri-Valley CAREs) and the organization's scientific advisor as part of the activities funded by an EPA Technical Assistance Grant (TAG) (March and October 2015). DOE/LLNL also conducted a site tour of environmental restoration activities and facilities for Tri-Valley CAREs and other members of the community on November 19, 2015. In addition, DOE/LLNL environmental documents, letters, and public notices were posted on a public website: <http://www-envirinfo.llnl.gov>.

2.1.1.2 Site 300 Environmental Restoration Project

Remedial activities are ongoing at Site 300, which became a CERCLA site in 1990 when it was placed on the National Priorities List. Remedial activities are overseen by the EPA, the Central Valley Regional Water Quality Control Board (CVRWQCB), and DTSC, under the authority of an FFA for the site. Contaminants of concern at Site 300 include VOCs (primarily TCE), high-explosive compounds, tritium, depleted uranium, silicone-based oils, nitrate, perchlorate, polychlorinated biphenyls, dioxins, furans, and metals. The contaminants present in

environmental media vary within the different environmental restoration operable units (OUs) at the site. See Webster-Scholten (1994) and Ferry et al. (1998) for background information on LLNL environmental characterization and restoration activities at Site 300. The *LLNL Site 300 2015 Annual Compliance Monitoring Report* (Buscheck et al. 2016) presents the current status of clean up at Site 300.

Regulatory Milestones. The Site 300 environmental restoration project had three milestones scheduled for completion in calendar year 2015. The following deliverables were submitted to the regulatory agencies:

- Annual 2014 Compliance Monitoring Report
- Draft Final First Five-Year Review Report for the Building 850/Pit 7 Complex Operable Unit
- First Semester 2015 Compliance Monitoring Report

The following non-milestone deliverables were submitted to the regulatory agencies during 2015 including:

- Draft and Final Work Plan for Additional Characterization of Soil in the Building 812 Firing Table Area
- Draft and Final Work Plan for Subsurface Soil and Ground Water Characterization at the Building 850 Firing Table
- Technical Memorandum for Characterization of Subsurface Soil in the Eastern General Services Area (GSA) Debris Burial Trenches
- Draft Final Phase 2 Pilot Study Work Plan for Enhanced *In Situ* Bioremediation at Building 834
- Draft and Final Characterization Work Plan for the Building 865 Area
- Work Plans for Well Drilling at Site 300 in Fiscal Year 2015

All calendar year 2015 milestones were met or renegotiated with the regulatory agencies.

With regulatory concurrence, the submittal dates for several deliverable documents were delayed and put on-hold as follows:

- The deliverable date for the Draft Final and Final Building 865 Remedial Investigation/Feasibility Study (RI/FS) was delayed and put on-hold as a result of a regulatory request for additional characterization of semi-volatile organic compounds (SVOCs) and VOCs in several areas at Building 865.
- The deliverable date for the Final Eastern GSA Final Close-out Report was delayed as a result of a regulatory request for additional characterization of polychlorinated biphenyls, SVOCs, and polycyclic aromatic hydrocarbons in subsurface soil in the Eastern GSA debris burial trench area.
- The deliverable date for the Building 850 Ground Water Perchlorate Focused Feasibility Study was delayed and put on-hold as a result of a regulatory request for additional characterization of perchlorate in subsurface soil at the Building 850 Firing Table.

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Treatment Facilities. During 2015, the Site 300 Environmental Restoration Project (ERP) operated 15 groundwater and 5 soil vapor treatment facilities at Site 300. The groundwater extraction wells and dual-phase extraction wells extracted about 28.8 million L of groundwater during 2015. The dual-phase extraction wells and soil-vapor extraction wells together removed 2.4 million m³ of soil vapor.

In 2015, the Site 300 treatment facilities removed nearly 5 kg of VOCs, 0.054 kg of perchlorate, 960 kg of nitrate, 0.01 kg of the high explosive compound RDX, 0.006 kg of silicone oils and 0.003 kg of uranium. Since ground water remediation began in 1990, approximately 1,639 million L of ground water and 28 million m³ soil vapor have been treated, resulting in removal of more than 600 kg of VOCs, 1.5 kg of perchlorate, 16,000 kg of nitrate, 2.2 kg of RDX, 9.5 kg of silicone oils, and 0.024 kg of uranium.

Site 300 restoration activities in 2015 were focused on enhancing and optimizing ongoing operations at treatment facilities, continuing bioremediation treatability studies, and characterization in the Building 812 OU. Groundwater concentration data indicate declines in contaminant concentrations in 2015 and progress toward off-site and on-site plume and source area cleanup. See Buscheck et al. (2016) for more information.

Community Relations. Site 300 community relations activities in 2015 included maintenance of information repositories and an administrative record, two meetings (March and October 2015) with members of Tri-Valley CAREs and the organization's scientific advisor as part of the activities funded by an EPA TAG, and tours of site environmental activities. In addition, DOE/LLNL environmental documents, letters, and public notices were posted on a public website: <http://www-envirinfo.llnl.gov>.

2.1.2 Emergency Planning and Community Right-to-Know Act and Toxics Release Inventory Report

Title III of SARA, known as the Emergency Planning and Community Right-to-Know Act (EPCRA), requires owners and operators of facilities who 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. Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, directs all federal agencies to comply with the requirements of the EPCRA, including SARA, Section 313, the Toxic Release Inventory (TRI) Program. EPCRA requirements and LLNL compliance are summarized in **Table 2-1**.

LLNL has reported lead release data via the Form R for Site 300 since 2002. The Form R is used for reporting TRI chemical releases and includes information about waste management and waste minimization activities. Over 99 percent of lead releases are associated with activities at the Site 300 Small Firearms Training Facility (SFTF). Data for the 2014 TRI Form R for lead at Site 300 was submitted to DOE/NNSA on June 17, 2015. Over the past several years, the lead releases have decreased due to increased use of frangible bullets.

Table 2-1. Compliance with EPCRA.

EPCRA section	Brief description of requirement	LLNL action
302	Notify State Emergency Response Commission (SERC) of presence of extremely hazardous substances.	Originally submitted 5/87.
303	Designate a facility representative to serve as emergency response coordinator.	Update submitted 04/23/15 to San Joaquin County for Site 300 and 04/14/15 to the Livermore-Pleasanton Fire Department (LFPD) for Livermore Site.
304	Report releases of certain hazardous substances to SERC and Local Emergency Planning Committee (LEPC).	No EPCRA-listed extremely hazardous substances were released above reportable quantities in 2015.
311	Submit Safety Data Sheets (SDSs) or chemical list to SERC, LEPC, and Fire Department.	As per the California Office of Emergency Services, the EPCRA Section 311 requirement is satisfied by the EPCRA Section 312 submittal and the filing of necessary amendments within 30 days of handling a previously undisclosed hazardous material subject to Section 312 inventory requirements.
312	Submit hazardous chemical inventory to local administering agency (county).	Submitted to San Joaquin County and the LFPD on 01/12/15 and 02/23/15, respectively.
313	Submit Form R to U.S. EPA and California EPA for toxic chemicals released above threshold levels.	Form R for lead for Site 300 submitted to DOE on 06/17/15; DOE forwarded it to U.S. EPA and California EPA on 06/17/15.

2.1.3 California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) Program is the combined federal and state program for the prevention of accidental release of regulated toxic and flammable substances. The goal of the combined program is to eliminate the need for two separate and distinct chemical risk management programs. The purpose of the CalARP program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy Community Right-to-Know laws. The CalARP program is implemented at the local government level by Certified Unified Program Agencies (CUPAs). The related federal regulations are the Clean Air Act 112(r) and Title 40, Code of Federal Regulations, Part 68 (40 CFR Part 68).

LLNL submitted a revised Livermore Site CalARP Level 1 risk management plan (RMP) in December 2011. The Livermore Site RMP includes lithium hydride, hydrofluoric acid, and nitric acid.

2.1.4 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) provides the framework at the federal level for regulating solid wastes, including wastes designated as hazardous. The California Hazardous Waste Control Law (HWCL) and California Code of Regulations (CCR) Title 22 set requirements for managing hazardous wastes and implementing RCRA in California. LLNL works with DTSC and CUPA to comply with these regulations and obtain hazardous waste permits.

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The hazardous waste management facilities at the Livermore Site consist of permitted units in Area 612 and Building 625 plus Buildings 693, 695, and 696, which make up the Decontamination and Waste Treatment Facility (DWTF). Permitted waste-management units include container storage, tank storage, and various treatment processes (e.g., wastewater filtration, blending, and size reduction). LLNL submitted the permit renewal application to DTSC in April 2009, followed by submittal of the human health risk assessment (HHRA) in December 2010 as part of the permit renewal process. Furthermore, DTSC regulated closure of Building 419 was achieved in November 2013. Post-closure care of groundwater shall be conducted under CERCLA.

The hazardous waste management facilities at Site 300 consist of three operational RCRA-permitted facilities. The Explosives Waste Storage Facility (EWSF) and the Explosives Waste Treatment Facility (EWTF) are permitted to store and treat explosives waste, respectively. The Building 883 container storage area (CSA) is permitted to store routine facility-generated waste such as spent acids, bases, contaminated oil, and spent solvents. Site 300 has one post-closure permit for the RCRA-closed Building 829 High Explosives Burn Pits. LLNL is currently in the process of renewing the hazardous waste facility permit for EWSF, EWTF, and Building 883 CSA, as well as the Building 829 post-closure permit. Transportation of hazardous or mixed waste over public roads occurs by DTSC-registered transporters, including LLNL.

2.1.5 California Medical Waste Management Act

All LLNL medical waste management operations are conducted in accordance with the California Medical Waste Management Act (MWMA). The program is administered by the California Department of Public Health (CDPH) and is enforced by the Alameda County Department of Environmental Health (ACDEH). LLNL's medical waste permit is renewed on an annual basis and covers medical waste generation and treatment activities for the 11 Biosafety Level (BSL) 2 facilities, and one BSL 3 facility at Building 368. During 2014, LLNL started updating the required Medical Waste Management Plans (MWMP for BSL 2 and BSL 3) to incorporate the new requirements for Assembly Bill 333 (AB 333). The revised MWMP was submitted to ACDEH in April 2015. In September 2015 and in January 2016, the MWMA was revised and the new requirements were included in the updated MWMP.

2.1.6 Radioactive Waste and Mixed Waste Management

LLNL manages radioactive waste and mixed waste in compliance with applicable sections of DOE Order 435.1, and the LLNL-developed Radioactive Waste Management Basis for the Lawrence Livermore National Laboratory (LLNL 2012), which summarizes radioactive waste management controls relating to waste generators and treatment and storage facilities.

2.1.7 Release of Property

LLNL does not release property (e.g., vehicles, equipment, or other materials) to the public with residual radioactivity above the limits specified in DOE Order 458.1. Pursuant to written procedures, items that are potentially contaminated or activated are either surveyed prior to the release to the public, or a process knowledge evaluation is conducted to verify that the material

has not been exposed to radioactive material or to energy capable of inducing radioactivity in the material. In some cases, both a radiological survey and a process knowledge evaluation are performed. Excessed items that meet the requirements for unrestricted-release are donated to interested state agencies, federal agencies, or universities; redeployed to other on-site users; or released to LLNL's Donation, Utilization and Sales group. In 2015, approximately 1,500 equipment release swipes were processed by LLNL's Radiological Measurements Laboratory; the equipment may have subsequently been used onsite or released to the public. Utilizing a graded approach, LLNL only keeps track of high value released items (e.g., those items worth greater than \$100,000). In 2015, no such high value items were released.

DOE issued a moratorium in January 2000 prohibiting the release of volume-contaminated metals and subsequently suspended the release of metals for recycling purposes from DOE radiological areas in July 2000. No metals subject to the moratorium or suspension were released from LLNL in 2015.

Excess property with residual radioactivity above the limits in DOE Order 458.1 is either transferred to other DOE facilities for reuse, or transferred to LLNL's Radioactive and Hazardous Waste Management for disposal as radioactive waste. There were no releases of real property to the public in 2015.

2.1.8 Federal Facility Compliance Act

LLNL continues to work with DOE to maintain compliance with the Federal Facilities Compliance Act (FFCA) Site Treatment Plan (STP) for LLNL, which was signed in February 1997. LLNL completed 3 milestones during 2015. An additional 16.0 m³ of newly generated mixed waste was accepted into the approved storage facilities and added to the STP. LLNL removed approximately 9.9 m³ of mixed waste from LLNL in 2015.

Reports and certification letters were submitted to DOE as required. LLNL continued the use of available commercial treatment and disposal facilities that are permitted to accept LLNL mixed waste. These facilities provide LLNL greater flexibility in pursuing the goals and milestones set forth in the STP.

2.1.9 Toxic Substances Control Act

The Federal Toxic Substances Control Act (TSCA) and implementing regulations found in 40 CFR Parts 700–789 govern the uses of newly developed chemical substances and TSCA-governed waste. In 2015, one transformer containing PCB oil, 24 small PCB capacitors and 14 PCB ballasts were transported to and disposed at the RCRA-permitted, Clean Harbors Treatment, Storage, and Disposal Facility (TSDF) in Aragonite, Utah.

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2.2 Air Quality and Protection

2.2.1 Clean Air Act

All activities at LLNL are evaluated to determine the need for air permits or equipment registrations. Air permits are obtained from the Bay Area Air Quality Management District (BAAQMD) for the Livermore Site and from the San Joaquin Valley Air Pollution Control District (SJVAPCD) and/or BAAQMD for Site 300. The BAAQMD also administers a boiler registration program for natural gas fueled boilers with rated heat input capacities greater than 2 million British Thermal Units per hour (Btu/hr.) and less than 10 million Btu/hr.

Both the BAAQMD and the SJVAPCD are overseen by the California Air Resources Board (CARB). CARB also oversees the statewide permitting for portable diesel fuel-driven equipment such as portable generators and portable air compressors. In addition, CARB presides over the state-wide registration of in-use off-road diesel vehicles, such as diesel powered forklifts, loaders, backhoes, graders, and cranes.

In 2015, LLNL operated 134 permitted air-pollutant emission sources at the Livermore Site and 36 permitted air-pollutant emission sources at Site 300. In addition, LLNL maintained the registrations for 36 natural gas boilers (and its commitments to replace boilers) with the BAAQMD at the Livermore Site and continued the registrations for 81 in-use off-road diesel vehicles with CARB at the Livermore Site and Site 300.

In 2015, LLNL continued to maintain a Synthetic Minor Operating Permit (SMOP) to ensure that actual emissions of regulated air pollutants from a total 283 solvent evaporation sources, fuel dispensing sources, remediation and wastewater sources, and combustions sources at the Livermore Site did not exceed federal Clean Air Act (CAA) Title V emission limits. LLNL was initially issued the SMOP by the BAAQMD in 2002 after it was determined that LLNL had the potential to emit regulated air pollutants in excess of federal CCA Title V emission limits, if all emission sources at the Livermore Site were to operate at maximum capacity. As a result, LLNL agreed to receive federally enforceable permit conditions in the SMOP that reflect actual emissions of regulated air pollutants from sources rather than potential emissions from sources. As such, LLNL has been able to demonstrate through extensive monitoring and record keeping practices of emissions for sources, and meeting significantly reduced air pollutant emissions limits in the SMOP that its actual emissions are well below CCA Title V emission limits, and thus, LLNL does not have any “major sources” of air pollutant emissions per 40 CFR 70.2.

Under the authority of California Assembly Bill 32 (AB32), the State of California has adopted several new regulations regarding emissions of greenhouse gases. Initially, California required the mandatory reporting of stationary emission sources from combustion of natural gas that exceeded 25,000 metric tons per year of CO₂ equivalent emissions. For the mandatory reporting years of CY2009, CY2010, and CY2011, the Livermore Site was slightly below the reporting threshold. Beginning in CY2012, California lowered the mandatory reporting threshold to 10,000 metric tons per year of CO₂ equivalent emissions, and consequently LLNL started

reporting emissions for CY2012 and continued reporting such emissions in CY2013, CY2014, and CY2015.

In addition, LLNL continues to implement reductions and controls to minimize CO₂ emissions. LLNL is replacing diesel engines, boilers and hot water heaters on a continuing basis, and the new equipment is more efficient than the replaced equipment, in terms of fuel use and air emissions, such as CO₂. LLNL Site 300 emissions of CO₂ are much lower than Livermore Site emissions, and there is no natural gas service at Site 300 that would generate CO₂ emissions.

Also under the authority of AB32, California has adopted special regulations pertaining to sulfur hexafluoride (SF₆), because of its high global warming potential. In CY2012, CY2013, CY2014, and CY2015, LLNL was required to submit an annual report to CARB describing the research uses of SF₆ and the measures taken to control the SF₆ emissions from such research activities, and was required to keep records on the amounts of SF₆ contained in and used for electrical switchgear. The reduction of greenhouse gases has been further encouraged by Executive Order 13514, which establishes an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions a priority for Federal agencies.

In addition, the federal EPA has a mandatory reporting regulation for stationary emission sources, similar to California's regulation. LLNL is currently below the mandatory reporting threshold for EPA of 25,000 metric tons per year at both the Livermore Site and Site 300.

2.2.2 National Emission Standards for Hazardous Air Pollutants, Radionuclides

To demonstrate compliance with 40 CFR Part 61, Subpart H (National Emission Standards for Hazardous Air Pollutants [NESHAPs] for radiological emissions from DOE facilities), LLNL monitors certain air-release points and evaluates the maximum potential dose to the public. The *LLNL NESHAPs 2015 Annual Report* (Wilson et al. 2016) reported that the estimated maximum radiological dose from radioactive air emissions were 1.7×10^{-2} μ Sv (1.7×10^{-3} mrem) for the Livermore Site and 4.8×10^{-3} μ Sv (4.8×10^{-4} mrem) for Site 300. The totals are well below the 100 μ Sv/y (10 mrem/y) site-wide dose limits defined by the NESHAPs regulation. The *LLNL NESHAPs 2015 Annual Report* is located in Appendix D of this report.

2.3 Water Quality and Protection

LLNL complies with requirements of the Federal Clean Water Act (CWA), Porter-Cologne Water Quality Control Act, and Safe Drinking Water Act (SDWA); the California Aboveground Petroleum Storage Act, Water Code, and Health and Safety Code; and City of Livermore ordinances, by complying with regulations and obtaining permits issued by the appropriate regulatory agencies whose mission is to protect water quality.

LLNL complies with the requirements of National Pollutant Discharge Elimination System (NPDES) and Waste Discharge Requirement (WDR) permits, and Water Quality Certifications issued by Regional Water Quality Control Boards (RWQCBs) and the State Water Resources Control Board (SWRCB) for discharges to waters of the U.S. and waters of the state. Discharges

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to the City of Livermore's sanitary sewer system are governed by permits issued by the Water Resources Division (WRD). The SDWA requires that LLNL register Class V injection wells with EPA, and LLNL obtains permits from the Army Corps of Engineers (ACOE) for work in wetlands and waters of the U.S.

The CWA and California Aboveground Petroleum Storage Act require LLNL to have and implement Spill Prevention Control and Countermeasure (SPCC) plans for aboveground, oil-containing containers. The LPPD and the San Joaquin County Environmental Health Department (SJCEHD) also issue permits for operating underground storage tanks (USTs) containing hazardous materials or hazardous waste (see **Table 2-2**). LLNL's USTs, for which permits are required, contain diesel fuel or gasoline; aboveground storage tanks, for which permits are not required, contain fuel, insulating oil, and process wastewater.

2.4 Other Environmental Statutes

2.4.1 National Environmental Policy Act and Floodplains and Wetland Assessments

The National Environmental Policy Act (NEPA) of 1969 is the U.S. government's basic environmental charter. When considering a proposed project or action at LLNL, DOE/NNSA must (1) consider how the action would affect the environment and (2) make certain that environmental information is available to public officials and citizens before decisions are made and actions are taken. The results of the evaluations and notice requirements are met through publication of "NEPA documents," such as environmental impact statements (EISs) and environmental assessments (EAs) under DOE NEPA Implementing Procedures in 10 CFR 1021.

In 2005, DOE/NNSA completed the Final Site-Wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement (2005 SWEIS) (U.S. DOE/NNSA 2005). In 2011, DOE/NNSA prepared a Supplement Analysis (SA) (DOE/EIS-0348-SA-03) of the 2005 SWEIS to consider whether the 2005 SWEIS should be supplemented, a new EIS should be prepared, or no further NEPA documentation is required (U.S. DOE/NNSA 2011). The SA examined changes in programs, projects, or operations since the 2005 SWEIS was prepared; new and modified plans, projects, and operations for the period from 2010 to 2015; as well as new information that was not available for consideration when the 2005 SWEIS was prepared. The SA concluded that a supplement to the 2005 SWEIS or a new SWEIS was not needed, and therefore, no further NEPA documentation was needed for the new and modified projects and modifications in site operations considered in the SA. Both the 2011 SA and the 2005 SWEIS are available on the web at <http://www-envirinfo.llnl.gov>.

In 2015, no other EISs or EAs were completed. Several Categorical Exclusions under DOE NEPA Regulations (10 CFR 1021) were completed as follows:

- LLNL Unmanned Aircraft Systems (UAS) Testing and Operations (NA-15-06)

- *Amsinckia grandiflora* Recovery Efforts (NA-15-05)
- Lease for Monopole Communication Cell Tower Installation and Operation (NA-15-04)
- Ground-Based Laser Field Experiments (NA-15-03)
- East Gate (Greenville Road) and Vasco Gate (East Ave) Kiosk Modifications, LLNL Livermore Site (NA-15-02)
- Vessel Burst Test, Site 300 (NA-15-01)
- National Car Rental LTO (10 CFR 1021: Appendix A to Subpart D)
- Uncle Credit Union License for Non-Federal Use of Property Renewal (10 CFR 1021: Appendix A to Subpart D)

There were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under DOE regulations in 10 CFR Part 1022.

2.4.2 National Historic Preservation Act

The National Historic Preservation Act (NHPA) provides protection and preservation of historic properties that are significant in the nation's history. LLNL resources subject to NHPA consideration range from prehistoric archeological sites to remnants of LLNL's own history of scientific and technological endeavors. The responsibility to comply with the provisions of the NHPA rests with DOE/NNSA as the lead federal agency in this undertaking. LLNL supports the agency's NHPA responsibilities with direction from DOE/NNSA.

In 2005, in consultation with DOE/NNSA, the California State Historic Preservation Officer (SHPO) formally determined that five archaeological resources, five individual buildings, two historic districts (encompassing 13 non-contiguous individual buildings), and selected objects in another building at LLNL are eligible for listing in the National Register of Historic Places (NRHP). In 2007, to assist DOE and SHPO in developing an agreement as to how to manage the NRHP-eligible properties, LLNL prepared a draft Programmatic Agreement (PA) that considered the preservation of historic values in compliance with Sections 106 of the NHPA. In 2012, DOE/NNSA invited the Advisory Council on Historic Preservation (ACHP) to be a signatory to the PA. In 2014, DOE, SHPO, and the ACHP determined a PA would no longer be pursued and that project-specific consultations in compliance with Sections 106 of the NHPA would be conducted. In 2015, DOE initiated consultation with SHPO and the ACHP to (1) remove specific equipment and upgrade the B851 facility, and (2) perform the final decommissioning and demolition of B850. In each case, as final mitigation for loss of integrity of the facility for the period of historic significance, DOE and LLNL prepared Historic American Building Survey/Historic American Engineering Report (HABS/HAER) documentation. Consultation on these actions has not been completed.

2.4.3 Antiquities Act of 1906

The Antiquities Act provides for protection of items of antiquities (i.e., archaeological sites and paleontological remains). The five NRHP-eligible archaeological sites noted in Section 2.4.2 are

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protected under the Antiquities Act. No paleontological remains subject to the provisions of the Antiquities Act were identified in 2015.

2.4.4 Endangered Species Act and Sensitive Natural Resources

LLNL meets the requirements of the Federal and State Endangered Species Acts (ESAs), the Eagle Protection Act, the Migratory Bird Treaty Act, and other applicable regulations as they pertain to endangered species, threatened species, and other special-status species (including their habitats) and designated critical habitats that exist at the LLNL sites. The 2015 compliance activities included:

- On June 17, 2013, DOE/NNSA requested re-initiation of formal consultation for the mitigation, monitoring, and reporting plan for the Building 850 PCB-bearing soil removal project. A Biological Opinion (BO) amendment was received for this project in May of 2014. A long-term management plan for this project was submitted to the U.S. Fish and Wildlife Service (FWS) on August 31, 2015 to complete the consultation process.

2.4.5 Federal Insecticide, Fungicide, and Rodenticide Act

LLNL complies with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which provides federal control of the distribution, sale, and use of pesticides and requires that commercial users of pesticides are certified pesticide applicators. The California Department of Pesticide Regulation (DPR) has enforcement responsibility for FIFRA in California; DPR has in turn given enforcement responsibility to county departments of agriculture. All pesticides at LLNL are applied, stored, and used in compliance with FIFRA and other California, Alameda County, and San Joaquin County regulations governing the use of pesticides. The staff of the Landscape and Pest Management Shop at the Livermore Site and the Laborer/Gardener Shop at Site 300 includes certified pesticide applicators. These shops ensure that all storage and use of pesticides at LLNL is in accordance with applicable regulations. LLNL also reviews pesticide applications to ensure they do not result in impacts to water quality or special status species.

2.5 Environmental Permits, Inspections, and Occurrences

LLNL's various missions require a variety of permits. **Table 2-2** is a summary of active permits in 2015 at the Livermore Site and Site 300. The external agencies that issue the permits may also perform inspections required by the permits. **Table 2-3** lists environmental inspections and findings from both LLNL sites in 2015.

Notification of environmental occurrences is required under a number of environmental laws and regulations as well as DOE Order 232.2 (Occurrence Reporting and Processing of Operations Information). **Table 2-4** provides a list of environmental incidents reportable under DOE Order 232.2.

Table 2-2. Active permits in 2015 at the Livermore Site and Site 300.

Type of permit	Livermore Site ^(a)	Site 300 ^(a)
Hazardous waste	<p>EPA ID No. CA2890012584. Hazardous Waste Facility Permit Number 99-NC-006 (RCRA Part B permit)—to operate hazardous waste management facilities.</p> <p>Registered Hazardous Waste Hauler authorized to transport wastes from Site 300 to the Livermore Site. Permit number 1351.</p> <p>Conditionally Exempt Specified Wastestream Permit to mix resin in Unit CE231-1.</p> <p>LPGD permit 092013-10697. Hazardous Waste Generator Program, Hazardous Materials Business Program, Above Ground Petroleum Tank Program, CA Accidental Release Program, and Underground Storage Tank Program. Permit Valid – September 20, 2013–September 19, 2018.</p>	<p>EPA ID No. CA2890090002. Hazardous Waste Facility Permit—CSA (Building 883), EWTF and EWSF.</p> <p>Hazardous Waste Facility Post-Closure Permit #02-BRK-04—Closed Building 829 High Explosives Open Burn Treatment Facility.</p> <p>PT0010318. Hazardous waste generation facility—SJCEHD.</p>
Medical waste	<p>ACDEH issued a permit that covers medical waste generation and treatment activities for the BSL 2 facilities at B132, B150 Complex, B360 Complex, B663, and the BSL 3 facility at Building 368.</p>	<p>Registered with San Joaquin County Environmental Health Department (SJCEHD) as a Small Quantity Medical Waste Generator in April 2015.</p>
Air	<p>BAAQMD issued 127 permits for operation of various types of equipment.</p> <p>BAAQMD issued a revision to the SMOP in 2015, which was initially issued in 2002 to ensure the NO_x and HAPs emissions from the site do not exceed federal Clean Air Act Title V emission limits.</p> <p>BAAQMD issued 5 Asbestos Removal and Demolition Permits.</p> <p>CARB issued 7 permits for the operation of portable diesel air compressors and generators.</p>	<p>SJVAPCD issued 34 permits for operation of various types of equipment.</p> <p>SJVAPCD approved a Prescribed Burn Plan for the burning of 2,176.5 acres of grassland.</p> <p>BAAQMD issued 1 permit for the operation of an emergency diesel generator.</p> <p>CARB issued 1 permit for the operation of portable diesel air compressor</p> <p>BAAQMD approved a Prescribed Burn Plan for the burning of 139.1 acres of grassland.</p>
Storage tanks	<p>One operating permit (092811-10697) issued by LPGD covering operation of 9 USTs, September 20, 2013–September 19, 2018, Fire Permit FP-2624 issued by LPGD was active 8/6/14 through 10/6/14 for closure of Tank 611O1-U1.</p>	<p>One operating permit (PT0010318) covering 3 underground petroleum storage tanks assigned individual permit numbers (PT0006785 [879-D1U1], PT0006530 [882-D1U1], and PT0007967 [879-G3U1]).</p>
Sanitary sewer	<p>Discharge Permit 1250^(b) for discharges of wastewater to the sanitary sewer.</p> <p>Permit 1510G for discharges of groundwater from CERCLA restoration activities.</p>	<p>WDR R5-2008-0148 for operation of sewage evaporation pond.</p>

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Table 2-2. (cont.) Active permits in 2015 at the Livermore Site and Site 300.

Type of permit	Livermore Site ^(a)	Site 300 ^(a)
Water	<p>WDR No. 88-075 for discharges of treated groundwater from Treatment Facility A to recharge basin.^(c)</p> <p>NPDES General Permit 2014-0057-DWQ for discharge of storm water associated with industrial activities.</p> <p>NPDES General Permit 2009-009-DWQ for discharges of storm water associated with construction activities affecting 0.4 hectares (1 acre) or more.</p> <p>FFA for groundwater investigation/remediation.</p>	<p>WDR No. 93-100 for post-closure monitoring requirements for two Class I landfills.</p> <p>WDR R5-2008-0148 for discharges to percolation pits and septic systems.</p> <p>NPDES General Permit 2014-0057-DWQ for discharge of storm water associated with industrial activities.</p> <p>NPDES Regional General Permit R5-2013-0074-025 for large volume discharges from the drinking water system.</p> <p>FFA for groundwater investigation/remediation.</p> <p>32 registered Class V injection wells.</p>

Note: See the **Acronyms and Glossary** section for acronym definitions.

^(a) Numbers of permits are based on actual permitted units or activities maintained and/or renewed by LLNL during 2015.

^(b) Permit 1250 includes some wastewater generated at Site 300 and discharged at the Livermore Site.

^(c) Recharge basin referenced in WDR Order No. 88-075 is located south of East Avenue within Sandia National Laboratories/California boundaries. The discharge no longer occurs; however, the agency has not rescinded the permit.

Table 2-3. Inspections of Livermore Site and Site 300 by external agencies in 2015.

Medium	Description	Agency	Date	Finding
Air	Air pollutant emission sources (Livermore Site)	BAAQMD	01/22/15	No violations
			02/25/15	
			04/29/15	
			05/21/15	
			06/25/15	
			09/24/15	
	Synthetic Minor Operating Permit (SMOP) (Livermore Site)	BAAQMD	10/28/15	No violations
			11/19/15	
			01/22/15	
Air pollutant emission sources (Site 300)	SJVAPCD	02/25/15	No Inspections in 2015	
		04/29/15		
		05/21/15		
		06/25/15		
		09/24/15		
		10/28/15		
Hazardous Materials Business Plan	CUPA Inspection (Livermore Site)	LFPD	08/17/15 – 08/20/15	One violation was issued for the full Hazardous Materials Business Plan (HMBP) not submitted annually as required.
	CUPA Inspection (Site 300)	SJCEHD	09/30/15 10/01/15 10/12/15 10/13/15 10/14/15 10/15/15	Two violations from the Hazardous Materials Program Inspection Report were issued for failure to complete and/or submit hazardous materials inventory for all reportable materials on site, and failure to complete and/or submit a site map with all required content.
Pesticides	Pest control records inspections (Livermore Site)	ACCDA	12/17/15	No violations
Sanitary sewer	Annual Inspection of the Sewer Monitoring Complex, Livermore Site	WRD	11/03/15	No violations
	Categorical sampling/inspection Building 153 and Building 321C. (Livermore Site)	WRD	03/31/15 10/28/15	No violations
	Annual compliance sampling at the Sewer Monitoring Complex (Livermore Site)	WRD	10/06/15	No violations

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Table 2-3. (cont.) Inspections of Livermore Site and Site 300 by external agencies in 2015.

Medium	Description	Agency	Date	Finding
Sanitary sewer (cont.)	Café grease interceptor inspections, Buildings 123 and 471 (Livermore Site)	WRD	11/03/15	No violations
			03/12/15	No violations
	Quarterly BOD/total suspended solids (TSS) sampling at Outfall (Livermore Site)	WRD	05/05/15	No violations
			08/13/15	No violations
Storage tanks	Compliance with underground storage tank requirements and operating permits (Livermore Site)	LPFD	10/06/15	No violations
			07/30/15	No violations
	Compliance with underground storage tank requirements and operating permits (Site 300)	SJCEHD	08/18/15	No violations
			08/04/15	No violations
	Compliance with aboveground storage tank requirements (SPCC/APSA, Livermore Site)	LPFD	08/17/15 – 08/20/15	One violation was issued for failing to update the SPCC Plan to add drums stored in B-432.
Compliance with aboveground storage tank requirements (SPCC/APSA, Site 300)	SJCEHD	09/30/15 10/01/15 10/05/15 10/15/15 10/19/15	SJCEHD issued 7 violations for: plan certification missing, facility diagram missing, discharge prevention methods missing, failure to designate accountable person, failure to address lighting, failure to perform tank inspections, and failure to test level sensing devices. The violations were based primarily on the fact that Site 300 did not have one comprehensive SPCC Plan for the entire facility.	
Waste	CUPA Inspection (Livermore Site)	LPFD	08/17/15 – 08/20/15	Four Class II violations were issued for: Failure to determine if a waste is a hazardous waste, failure to properly label a hazardous waste container, failure to properly close a hazardous waste container when not in active use, and failure to meet annual training requirement for universal waste handlers.
			09/30/15 10/01/15 10/05/15 10/15/15 10/19/15	SJCEHD issued 19 violations for failing to comply with applicable hazardous waste generator requirements. Two violations were rescinded as a result of additional information LLNL Site 300 provided to SJCEHD. LLNL Site 300 submitted the Return To Compliance Certification to SJCEHD for the remaining 17 violations.
	Hazardous waste facilities Compliance Evaluation Inspection (CEI) (Site 200)	EPA	NA	No inspections in 2015
	Hazardous waste facilities Compliance Evaluation Inspection (CEI) (Site 300)	EPA	NA	No inspections in 2015.
	Medical Waste facilities inspection	ACDEH	7/29/15	No violations.
Water	Permitted operations (Site 300)	CVRWQCB	NA	No Inspections in 2015

Note: See the **Acronyms and Glossary** section for acronym definitions.

Table 2-4. Environmental Occurrences reported under the Occurrence Reporting System in 2015.

Date ^(a)	Occurrence category/group	Description
02/12/15	Significance Category SC4 Occurrence under Group 9(1) OR 2015-0006	<p>On February 12, 2015, the Environmental Functional Area (EFA) of the LLNL received a revised Final Inspection report from the LFPD regarding the September 2014 CUPA Inspection. The inspection report included four notices of violations; one California Health and Safety Code (HSC) violation and three California Code of Regulations (CCR) violations:</p> <ul style="list-style-type: none"> – Failure to ensure that appropriate personnel receive initial and annual training (HSC 6.95 25505(a)(4)) – Failure to determine if the waste generated is a hazardous waste (22 CCR 12 66262.11) – Failure to prepare a hazardous waste manifest for the transport of hazardous waste (22 CCR 12 66262.20) – Failure to inspect all hazardous waste tank systems and maintain a log of the inspections (22 CCR 15 66265.195[a])
06/02/15	Significance Category SC3 Occurrence under Group 5A(1) OR 2015-0016	<p>On June 2, 2015, approximately 100 gallons of 20% copper sulfate (CuSO₄) solution overflowed from a copper plating bath while being topped off with water. The plating solution overflowed onto the work shop floor and approximately 50 gallons leaked out of the shop area onto the asphalt and concrete on the north side of B321A. Upon discovery, the water to the bath was immediately shut off. The Fire department responded and Radioactive and Hazardous Waste Management (RHWM) was called in to perform clean up. It was determined that the release exceeded the Reportable Quantity specified in 40 CFR Part 302 for copper sulfate. An estimated 1–10 gallons made it to the storm drains but none was released off site. The EFA Manager made the required federal, state and local notifications.</p> <p>The following organizations were notified:</p> <ul style="list-style-type: none"> – National Response Center (NRC) (NRC report No. 1118448) – Governor’s Office of Emergency Services (OES) (Report No. 15-3102) – Our Certified Unified Program Agency (CUPA) representatives (LFPD) – Department of Toxic Substance Control (DTSC) (Courtesy notification)
08/12/15	Significance Category SC4 Occurrence under Group 9(1) OR 2015-0025	<p>On August 12, 2015, LLNL received a Warning Notice from the City of Livermore. The Wastewater Discharge Permit issued to LLNL requires submittal of monthly self-monitoring reports by the 25th of each month for the preceding month. The June 2015 report was due to the City of Livermore on July 25, 2015. LLNL personnel placed the report in the US mail on July 23, 2015, but it was not received by the City of Livermore until July 29, 2015.</p>

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Table 2-4. (cont.) Environmental Occurrences reported under the Occurrence Reporting System in 2015.

Date ^(a)	Occurrence category/group	Description
08/20/15	Significance Category SC4 Occurrence under Group 9(1) OR 2015-0026	<p>On August 20, 2015, LLNL was notified by electronic transmittal of the initial CUPA inspection report documenting a total of five violations: four RCRA violations with one of the violations still identified as being in open status and one HMBP violation is listed as resolved.</p> <p>The four RCRA violations included:</p> <ul style="list-style-type: none"> – Two violations assigned to a 5-gallon bucket of absorbent saturated with coolant waste. One violation for the container not being labeled and another for the container being open, in Building 176. – One violation was issued because not all shredded computer waste is being handled as RCRA waste (only shredded media tape was being managed as RCRA waste) in B-297. – One violation documenting two employees whose Universal Waste Management training (EP0016-W) had lapsed. <p>The one HMBP violation was for the HMBP Emergency Response/Contingency Plan and Employee Training Plan not submitted by February 25, 2014.</p> <p>A revised inspection report received September 23, 2015 added an APSA violation for failing to update the SPCC Plan to add drums stored in B-432.</p>
09/28/15	Significance Category SC4 Occurrence under Group 6B(4) OR 2015-0032	<p>On September 28, 2015, a Health and Safety Technician (H&S Tech) at Site 300 was supporting the removal of large/heavy pieces of steel from the Building 843 Corp Yard in support of a site wide cleanup effort. These items have been stored in this location for many years, beyond the memory of the current staff, which dates back two decades. These items were expected to be uncontaminated. The H&S Tech had previously discussed removal of this material with the Site 300 Health Physicist and was directed to conduct visual inspections of all material and also representative radiological surveys of the items to identify unexpected issues prior to off-site shipment. While surveying a large metal plate at the bottom of a stack of plates, the H&S Tech identified elevated readings with a G-M pancake probe and initiated a work pause. This plate weighs 4,380 pounds, is 4 in. thick × 57.5 in. wide × 72 in. long. This particular item was differentiated from other items due to elevated readings discovered in an access hole in the center and in an impact crater on the side of the plate. These craters are indicative of material that has been directly impacted during explosives testing that could have included depleted uranium, which may leave residual contamination at the impact location(s). The contamination level was confirmed to be ~160,000 dpm/100 cm². None of the other plates had any signs of material directly impacted by depleted uranium munitions such as holes or shrapnel marks, including those items already shipped offsite.</p> <p>At approximately 9:00 AM, the H&S Tech contacted his supervisor and the Health Physicist to discuss the findings. The decision made was to isolate the subject steel item and perform a 100% scan survey on the items already loaded for shipment. No contamination was detected on any other items and the truck was cleared and released for transport. The fork lift tines used to lift the steel plates were also surveyed and showed no evidence of contamination.</p> <p>On the morning of 9/29/2015, the Tech Supervisor contacted the H&S Tech for a status update and directed them to physically cordon off the area and ensure the area is posted as a Radioactive Material Area (RMA). At approximately 10:30 AM, the alternate Site 300 Health Physicist was apprised of the situation and began to collect additional information pertinent to notification and reporting requirements.</p>

Table 2-4. (cont.) Environmental Occurrences reported under the Occurrence Reporting System in 2015.

Date(a)	Occurrence category/group	Description
11/09/15	Significance Category SC4 Occurrence under Group 9(1) OR 2015-0037	<p>On November 9, 2015, LLNL was made aware of a Notice of Violation (NOV) received from the San Joaquin County for routine inspections performed at Site 300. The inspection report included violations in three categories with a total of 28 violations. The violations are summarized below by inspection report.</p> <p>Seven violations from the Aboveground Petroleum Storage Act Inspection Report:</p> <ul style="list-style-type: none"> - One violation with the preparation and implementation of a Spill Prevention Control and Countermeasures (SPCC) Plan - Four violations related to general requirements for SPCC Plans - Two violations with SPCC Plan requirements for onshore facilities <p>Two violations from the Hazardous Materials Program Inspection Report:</p> <ul style="list-style-type: none"> - A failure to complete and/or submit hazardous materials inventory for all reportable materials on site - A failure to complete and/or submit a site map with all required content <p>Nineteen violations from the Resource Conservation and Recovery Act (RCRA) Large Quantity Hazardous Waste Generator Inspection Report:</p> <ul style="list-style-type: none"> - Two violations of record keeping/documentation requirements - Two violations of treatment, transport and disposal requirements - Two violations of preparedness and prevention requirements - Five violations of container management requirements - Three violations of labeling and storage requirements - Five violations of universal waste requirements

Note: See the **Acronyms and Glossary** section for acronym definitions.

(a) Date the occurrence was categorized not discovered.

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