

2. Compliance Summary

LLNL activities comply with federal, state, and local environmental regulations, internal requirements, Executive Orders, and DOE Orders as specified in Contract DE-AC52-07NA27344. This chapter provides an overview of LLNL's compliance programs and activities during 2013.

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 2013 Annual Report* (Buscheck et al. 2014) presents the current status of clean up at the Livermore Site.

2. Compliance

Regulatory Milestones. The Livermore Site environmental restoration project had 9 milestones scheduled for completion in calendar year 2013. The following deliverables were submitted to the regulatory agencies:

- Fourth Quarter 2012 Self-Monitoring Report
- 2012 Annual Report
- First, Second, and Third Quarter 2013 Self-Monitoring Report
- Draft and Draft Final Explanation of Significant Differences for Institutional Controls

The Final Explanation of Significant Differences for Institutional Controls was scheduled for 2013. However, it has been delayed due to regulatory comments.

The other regulatory milestones included the following:

- Receive regulatory comments on Draft Explanation of Significant Differences for Institutional Controls

All other calendar year 2013 milestones were met.

Treatment Facilities. During 2013, the Livermore GWP maintained 28 groundwater and 9 soil vapor treatment facilities. The groundwater extraction wells and dual phase extraction wells extracted about 1,132 million L of groundwater during 2013. The dual-phase extraction wells and soil-vapor extraction wells together removed 1.7 million m³ of soil vapor.

In 2013, the Livermore GWP treatment facilities removed about 43 kg of VOCs. Since remediation efforts began in 1989, more than 18.8 billion L of groundwater and approximately 16.9 million m³ of soil vapor have been treated, removing about 3,117 kg of VOCs.

Livermore Site restoration activities in 2013 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 2013. Hydraulic containment along the western and southern boundaries of the site was fully maintained in 2013, and progress was made toward interior plume and source area clean up. See Buscheck et al. (2014) for more information.

Community Relations. Livermore Site community relations activities in 2013 included maintenance of information repositories and an administrative record; and two meetings (May and December 2013) 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); for Tri-Valley CAREs (May 2013) and Alliance for Nuclear Accountability (November 2013). 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 2013 Annual Compliance Monitoring Report* (Dibley et al. 2014) presents the current status of clean up at Site 300.

Regulatory Milestones. The Site 300 environmental restoration project had 12 milestones scheduled for completion in calendar year 2013. The following deliverables were submitted to the regulatory agencies:

- Annual 2012 Compliance Monitoring Report
- Draft and Draft Final Building 854 Five-Year Review
- Draft Final and Final Operable Units 3 and 8 Five-Year Review
- First Semester 2013 Compliance Monitoring Report
- Draft Building 865 Technical Memorandum in Support of a Record of Decision (ROD) Amendment (TMSRA), also called the Draft Building 865 Remedial Investigation/Feasibility Study

The other regulatory milestones included:

- Regulatory comments due on Draft Building 865 TMSRA
- Regulatory comments due on Draft Building 854 Five-Year Review

All calendar year 2013 milestones were met or renegotiated with the regulatory agencies. The submittal dates for the Draft Final and Final Building 865 TMSRA and the Final Building 854 Five-Year Review were delayed to address regulatory comments.

Four non-milestone deliverables were submitted to the regulatory agencies during 2013 including:

- Addendum to the Compliance Monitoring Plan and Contingency Plan for Environmental Restoration at Lawrence Livermore National Laboratory Site 300
- Exposure Parameters for the Deer Mouse and Rock Wren at Lawrence Livermore National Laboratory Site 300
- Mammalian and Avian Toxicity Reference Values for use in the Building 812 Baseline Ecological Risk Assessment at Lawrence Livermore National Laboratory Site 300
- Technical Memorandum for Additional Characterization of the Building 812 Operable Unit at the Lawrence Livermore National Laboratory Site 300

2. Compliance

Treatment Facilities. During 2013, 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 42.6 million L of groundwater during 2013. The dual-phase extraction wells and soil-vapor extraction wells together removed 2.8 million m³ of soil vapor.

In 2013, the Site 300 treatment facilities removed nearly 11 kg of VOCs, 0.12 kg of perchlorate, 1,400 kg of nitrate, 0.17 kg of the high explosive compound RDX, 0.0017 kg of silicone oils (TBOS/TKEBS), and 0.024 kg of uranium. Since ground water remediation began in 1990, approximately 1,581 million L of ground water and 23.2 million m³ soil vapor have been treated, resulting in removal of more than 590 kg of VOCs, 1.4 kg of perchlorate, 14,000 kg of nitrate, 1.9 kg of RDX, 9.5 kg of silicone oils, and 0.041 kg of uranium.

Site 300 restoration activities in 2013 were focused on enhancing and optimizing ongoing operations at treatment facilities, continuing bioremediation treatability studies, and characterization in the Building 812 Operable Unit. Groundwater concentration data indicate declines in contaminant concentrations in 2013 and progress toward offsite and onsite plume and source area cleanup. See Dibley et al. (2014) for more information.

Community Relations. Site 300 community relations activities in 2013 included maintenance of information repositories and an administrative record, two meetings (May and December 2013) 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 2012 TRI Form R for lead at Site 300 was submitted to DOE/NNSA on June 17, 2013. 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 10/4/13 to San Joaquin County for Site 300 and 9/23/13 to the Livermore-Pleasanton Fire Department 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 2013.
311	Submit MSDSs or chemical list to SERC, LEPC, and Fire Department.	As per the California Emergency Management Agency, 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 Livermore-Pleasanton Fire Department on 1/8/13 and 2/15/13, 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 6/17/13; DOE forwarded it to U.S. EPA and California EPA on 6/17/13.

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 of the Code of Federal Regulations (CFR), Part 68.

In June 2000, LLNL Site 300 submitted a risk-management plan (RMP) to the San Joaquin County, Office of Emergency Services (SJCOES). The RMP described the systems in place to prevent or mitigate the hazards associated with chlorine used in the LLNL Site 300 water treatment system. In accordance with the Final CalARP Program Regulations in the California Code of Regulations (Title 19, Division 2, Chapter 4.5), the LLNL Site 300 RMP was last updated in September 2010. On August 29, 2013, LLNL submitted a de-registration of the LLNL Site 300 water treatment system to the SJCOES. The SJCOES visited Site 300 on September 11, 2013 to verify that the chlorine gas cylinders had been removed.

2. Compliance

LLNL submitted a revised Livermore Site CalARP Level 1 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.

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 (CMWMA). The program is administered by the California Department of Public Health (DPH) 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 six Biosafety Level (BSL) 2 facilities, and the BSL 3 facility at Building 368. During 2013, LLNL started updating the required Medical Waste Management Plans (BSL 2 and BSL 3) and it will be submitted to ACDEH in the first half of 2014.

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 2009), 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 to the public property (e.g., vehicles, equipment, or other materials) 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 either donated to interested state agencies, federal agencies, or universities; redeployed to other onsite users; or released to LLNL's Donation, Utilization and Sales group. In 2013, approximately 1,800 equipment release swipes were processed by LLNL's Radiological Measurements Laboratory; the equipment may have subsequently been used on-site 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 2013, 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 2013.

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 2013.

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 5 milestones during 2013. An additional 22.3 m³ of newly generated mixed waste was accepted into the approved storage facilities and added to the STP. LLNL removed approximately 32.9 m³ of mixed waste from LLNL in 2013.

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. Compliance

2.1.9 Toxic Substances Control Act

The Federal Toxic Substances Control Act (TSCA) and implementing regulations found in Title 40 of the Code of Federal Regulation, Parts 700–789 (40 CFR 700–789) govern the uses of newly developed chemical substances and TSCA-governed waste. In 2013, LLNL generated TSCA PCB/Low Level Radioactive waste that was containerized in two 55-gallon steel drums. The two drums were accepted for final disposal by Energy Solutions in Clive, Utah on January 16, 2014.

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 2013, LLNL operated 149 permitted air-pollutant emission sources at the Livermore Site and 39 permitted air-pollutant emission sources at Site 300. In addition, LLNL maintained the registrations for 33 natural gas boilers with the BAAQMD at the Livermore Site and continued the registrations for 79 in-use off-road diesel vehicles with CARB at the Livermore Site and Site 300.

In 2013, LLNL continued to maintain a Synthetic Minor Operating Permit (SMOP) to ensure that actual emissions of regulated air pollutant from a total 281 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 (GHG). 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 CY 2013. 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 GHG potential. In CY2012 and CY 2013, 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 2013 Annual Report* (Wilson et al. 2014) reported that the estimated maximum radiological dose from radioactive air emissions were 0.018 μSv (0.0018 mrem) for the Livermore Site and 4.0×10^{-7} μSv (4.0×10^{-8} mrem) for Site 300. The totals are well below the 100 μSv/y (10 mrem/y) site-wide dose limits defined by the NESHAPs regulation. The *LLNL NESHAPs 2013 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.

2. Compliance

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 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 ACDEH and the San Joaquin County Environmental Health Department (SJCEHD) also issue permits for operating underground storage tanks containing hazardous materials or hazardous waste (see **Table 2-2**). LLNL's underground storage tanks, for which permits are required, contain diesel fuel, gasoline, and used oil; 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 environmental impact statement (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 process involved an extensive public outreach campaign, including a 45-day public comment period. 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 2013, no other EISs, or EAs were completed. Five Categorical Exclusions under DOE NEPA Regulations (10 CFR 1021) were completed for:

- Relocation of the Central General Services Area (GSA) Operating Unit (OU) Misting Towers (NA-13-01)
- Expansion of the LLNL Mobile Analytical Laboratory (MAL) Support Operations (NA-13-02)
- Experimental Detector Construction and Operation (NA-13-05)
- Pool M1a and b Habitat Enhancement Project, Site 300 (NA-13-11)
- M2 Pool Habitat Enhancement Project, Site 300 (NA-13-12)

There were no proposed actions at LLNL that required separate DOE floodplain or wetlands assessments under DOE regulations in 10CFR 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). 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), which includes a draft Archaeological Resources Treatment Plan and a draft Historic Buildings Treatment Plan as attachments. These plans describe specific and optional resource management and treatment strategies that DOE/NNSA, in cooperation with LLNL, could implement to ensure that NRHP-eligible historic properties under LLNL's jurisdiction are managed and maintained in a way that considers 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. As of the end of 2013, the draft PA and treatment plans were being reviewed by ACHP and SHPO.

In 2011, LLNL completed a five-year re-evaluation of the historic building assessment originally completed in 2004 (published in 2007). The five-year cycle of re-evaluations for NRHP-eligibility is a requirement of the draft PA. Final recommendations from the re-evaluation include removing Building 391 from the list of NRHP-eligible buildings and allowing Building 332 to

2. Compliance

evolve as needed, eventually losing integrity for its period of historic significance and therefore not be considered NRHP-eligible. These two buildings have been preserved via recordation, a mitigation option identified in the draft Historic Buildings Treatment Plan. Two buildings, B810A and B865E, were recommended for addition to the inventory of NRHP-eligible buildings. As of the end of 2013, consultation of the five-year re-evaluation report with SHPO has not been initiated.

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 protected under the Antiquities Act. No paleontological remains subject to the provisions of the Antiquities Act were identified in 2013.

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 following list highlights 2013 compliance activities:

- On March 29, 2013, DOE/NNSA requested formal consultation with the U.S. Fish and Wildlife Service (FWS) regarding infill construction and redevelopment at the Livermore Site. The FWS issued a Biological Opinion (BO) for this project on August 1, 2013.
- On July 9, 2013, DOE/NNSA re-initiated formal consultation with the FWS for the Pool M2 habitat enhancement project at Site 300. On November 22, 2013, the FWS issued a BO amendment for long-term maintenance activities at the site. (Pool M2 was originally enhanced to benefit California tiger salamanders as mitigation for the closure of the explosives wastewater surface impoundments.)
- 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 BO amendment is anticipated by summer of 2014.

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 2013 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 2013.

Notification of environmental occurrences is required under a number of environmental laws and regulations as well as DOE Order 232.2. **Table 2-4** provides a list of environmental incidents reportable under DOE Order 232.2.

Table 2-2. Active permits in 2013 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>LPFD permit 092811-10697. 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) and EWSF.</p> <p>Hazardous Waste Facility Permit—EWTF.</p> <p>Hazardous Waste Facility Post-Closure Permit—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, and the BSL 3 facility at Building 368.</p>	NA
Air	<p>BAAQMD issued 136 permits for operation of various types of equipment.</p> <p>BAAQMD issued a revision to the SMOP in 2009, which was initially issued in 2002 to ensure the NOx 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 35 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 covering 10 underground petroleum storage tanks.</p>	<p>One operating permit covering 3 underground petroleum storage tanks assigned individual permit numbers.</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>

Table 2-2. (cont.) Active permits in 2013 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 Permit No. CA0030023 for discharges of storm water associated with industrial activities and low-threat non-storm water discharges to surface waters.</p> <p>NPDES General Permit No. CAS000002 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 No. CAS000001 for discharge of storm water associated with industrial activities.</p> <p>NPDES Regional General Permit No. CAG995001 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 2013.

^(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.

2. Compliance

Table 2-3. Inspections of Livermore Site and Site 300 by external agencies in 2013.

Medium	Description	Agency	Date	Finding
Waste	CUPA Inspection (Livermore Site)	LPFD	09/17/13 – 09/19/13	One minor violation related to hazardous waste labeling in B231 was found on 9/19/13. Two observations: faded hazardous waste labels in B132 and update Cal ARP risk management program (RMP).
	Medical Waste Inspection (Livermore Site)	ACDEH	07/25/13	Three Areas of Concern were a small bag of biohazardous waste (labeled with date) inside metal trash can without required red plastic bag; 1 box of pipettes labeled biohazardous but missing biohazardous symbol, which was immediately corrected; and B361 R1634 PLS Autoclave calibration ran for 29 minutes but was not corrected because it required 30 minutes. No violations.
	Waste Tire and Heavy Equipment Tire Storage Inspection Main Site	ACDEH	04/14/13	No violations
	Waste Tire Inspection at Site 300	CalRecycle	05/06/13	No violations
	Independent External Audit for NNSWAC		08/12-15/13	No findings
Air	Air pollutant emission sources (Livermore Site)	BAAQMD	01/21/13 02/21/13 04/25/13 05/22/13 06/25/13 06/27/13 09/19/13 11/21/13	No violations
	Synthetic Minor Operating Permit (SMOP) (Livermore Site)	BAAQMD	01/21/13 02/21/13 04/25/13 05/22/13 08/22/13 09/19/13 11/21/13	No violations
Sanitary sewer	Annual Inspection of the Sewer Monitoring Complex, Livermore Site	WRD, State Water Resources Board, EPA Contractors	1/29/2013	No violations
	Inspection of Categorical Processes at Buildings 153 and 321C.	WRD, State Water Resources Board, EPA Contractors	1/29/2013	No violations

Table 2-3. (cont.) Inspections of Livermore Site and Site 300 by external agencies in 2013.

Medium	Description	Agency	Date	Finding
Sanitary sewer	Inspection of DWTF at B695	WRD	10/02/2013	No violations
	Categorical sampling/inspection Building 153 and Building 321C. (Livermore Site)	WRD	10/01/2013	No violations
	Annual compliance sampling at the Sewer Monitoring Complex (Livermore Site)	WRD	10/02/2013	No violations
	Café grease interceptor inspections, Buildings 123 and 471 (Livermore Site)	WRD	10/01/2013	No violations
	Quarterly BOD/TSS sampling at Outfall (Livermore Site)	WRD	03/13/2013 06/26/2013 08/20/2013 12/03/2013	No violations
Storage tanks	Compliance with underground storage tank requirements and operating permits (Livermore Site)	LPFD	08/13/13 & 08/20/13	Two violations: 1. The S2 High Level Liquid Leak Sensor on the 611-G3U1 (E85) UST did not alarm when tested. The defective sensor was replaced during the inspection and was tested and passed. No follow up was required by LLNL. 2. A leak in the 611-G3U1 (E85) UST Turbine Sump's secondary containment caused the food grade interstitial monitoring fluid to leak out and the leak sensor was in alarm. LLNL submitted a Corrective Action Plan to repair the Turbine Sump leak, the leak was repaired on 12/23/2013, and the Turbine Sump was returned to service.
Pesticides	Pest control records inspections (Livermore Site)	ACCDA	1/3/13	No violations
Waste	Hazardous waste facilities Compliance Evaluation Inspection (CEI) (Site 200)	DTSC	04/29/13, 05/01/13, 05/02/13 & 05/07/13	No violations.
Air	Air pollutant emission sources (Site 300)	SJVAPCD	04/11/13 10/02/13	No violations
Water	Permitted operations (Site 300)	CVRWQCB	01/23/13 11/17/13	No violations
Storage tanks	Compliance with underground storage tank requirements and operating permits (Site 300)	SJCEHD	08/06/13	No violations

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

2. Compliance

Table 2-4. Environmental Occurrences reported under the Occurrence Reporting System in 2013.

Date ^(a)	Occurrence category/group	Description
2/04/13	Significance Category SC4 Occurrence under Group 5A(2) OR 2013-0003	On February 2, 2013, sewage water was observed flowing out a sewer manhole cover, across an asphalt walkway and into a nearby storm drain. Additionally, sewage water was observed flowing along the curb parallel to Avenue B. The sewage overflow continued to the Arroyo via the storm drain and eventually flowed offsite before the release could be controlled. During the investigation it was determined that approximately 9,000 gallons of sewage water were released. This release was immediately reportable to the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB).
02/12/13	Significance Category SC3 Occurrence under Group 5A(2) and OR 2013-0005	On February 12, 2013, an incident occurred at Site 300 in Building 827D Room 105. Workers wearing safety glasses and butyl acid gloves were adding approximately 2 liters of 20% fuming sulfuric acid to a mixture of 2,6-diaminopyrazine-1-oxide in 12 liters of concentrated (95-98%) sulfuric acid. The result of the addition of the 20% fuming sulfuric acid was an increase of pressure in a 100-liter glass reaction vessel, which caused the spraying of acid onto three people resulting in two significant injuries and one minor exposure. The San Joaquin County Environmental Health Department and the California Environmental Management Agency (CalEMA) were promptly notified of the incident.
04/25/13	Significance Category SC4 Occurrence under Group 5A(2) OR 2013-0017	On April 24, 2013, a broken plastic elbow was discovered on a 2" city water-supply line providing water to an eye wash station. The water sprayed onto asphalt and ran approximately 20 feet to a storm drain. The storm drain leads to a culvert that terminates at the Arroyo Las Positas. It is estimated that 500 gallons of water flowed into Arroyo Las Positas, and subsequently left the LLNL site. This release was reported to the SFBRWQCB.
08/12/13	Significance Category SC4 Occurrence under Group 9(1) OR 2013-0031	<p data-bbox="926 808 1934 889">On August 12, 2013, LLNL received a Notice of Violation (NOV) from the City of Livermore, CA, concerning co-mingling of categorical aqueous waste with non-categorical waste prior to treatment and release to the sanitary sewer.</p> <p data-bbox="926 914 1934 995">Upon review of the July 2013, LLNL Wastewater Point-Source Monitoring Report, the City of Livermore, CA, issued a NOV for eight instances that were found to be in violation of Federal Categorical Pretreatment Standards, 40 CFR Part 403, and/or the conditions specified in LLNL Wastewater Discharge Permit #1250.</p> <p data-bbox="926 1019 1388 1044">Specifically, the NOV cites the following violation:</p> <ol data-bbox="926 1052 1955 1468" style="list-style-type: none"> <li data-bbox="926 1052 1955 1101">1) Comingling of Categorical Wastes: RHWL co-mingled regulated categorical waste with non-regulated waste streams prior to treatment, compliance monitoring, and discharge to the sanitary sewer on 3 occasions. <li data-bbox="926 1125 1955 1312">2) Incorrect Analytical Methods Utilized for Self-Monitoring Samples: The Livermore Site Semiannual Monitoring report indicates that Methods SW846 E901 C (cyanide), SW846 8260 B (ITO), and SW846 601 B (Metals) were utilized to determine compliance with sanitary sewer discharge limits for regulated waste from Buildings 153 and 322. The Wastewater Discharge Permit #1250 issued to Lawrence Livermore National Laboratory requires that the following methods be utilized to determine compliance with sanitary sewer discharge limits: Standard Method 4500-CN-E (Cyanide), EPA Methods 624 and 625 (ITO), and EPA Method 200.7 (Metals), (3 incidents of non-compliance). <li data-bbox="926 1336 1955 1468">3) Failure to Monitor for Cyanide: The Livermore Site Semiannual Report indicates that the required cyanide analysis was not performed on the regulated discharges from Building 322 (Metal Finishing, 40 CFR 433) on 06/19/12 and 09/05/12. The Wastewater Discharge Permit #1250 issued to Lawrence Livermore National Laboratory and 40 CFR Part 433 requires that cyanide analysis be performed on all process related discharges to the sanitary sewer (2 incidents of non-compliance)..

Table 2-4. (cont.) Environmental Occurrences reported under the Occurrence Reporting System in 2013.

Date ^(a)	Occurrence category/group	Description
08/27/13	Significance Category SC4 Occurrence under Group 9(1) OR 2013-0034	<p>A California Department of Public Health (CDPH) enforcement letter was transmitted to LLNL on August 27, 2013, confirming that the Lawrence Livermore National Laboratory, Site 300, had not been operating in accordance to their domestic water supply permit. During an August 6, 2013 inspection by the CDPH, it was noted that a new method of treatment, sodium hypochlorite, had been introduced to the Site 300 water distribution system without being approved or permitted by the CDPH.</p> <p>Section 116550(a) of the California Health and Safety Code specifies: "No person operating a public water system shall modify, add or change his or her source of supply or method of treatment of, or change his or her distribution system as authorized by a valid existing permit issued to him or her by the department unless the person first submits an application to the department and receives an amended permit as provided in this chapter authorizing the modification, addition, or change in his or her source of supply or method of treatment."</p> <p>Although Site 300 had submitted a permit amendment application in May 2013, a subsequent request from the CDPH to submit a chlorination plan for the new equipment/treatment method being installed had not been fulfilled by LLNL. Thus, the water treatment system modification/operations/activities noted during the August 6, 2013 inspection were found not to be in accordance with the existing domestic water-supply permit.</p>
09/03/13	Significance Category SC4 Occurrence under Group 5A(2) OR 2013-0035	<p>On September 3, 2013, irrigation water was observed overflowing the landscaped area on the southwest side of Building 482. LLNL staff responded and discovered that an irrigation line was stuck open from 2 am to 2 pm on September 3, 2013. The irrigation water was not originally noticed because it was being discharged into shrubs located around the building. In the twelve-hour period that the valve was stuck open, approximately 17,300 gallons of irrigation water was discharged. Although some of the water absorbed into a landscaped area, once the ground was saturated, water flowed into storm water catch basins. The water then flowed into a storm drainage channel and finally into Arroyo Las Positas. It is estimated that approximately 13,000 gallons of water flowed offsite.</p> <p>This release was reported to the SFBRWQCB.</p>
09/09/13	Significance Category SC4 Occurrence under Group 9(1) OR 2013-0036	<p>LLNL received a letter on August 29, 2013 from the Federal Aviation Administration (FAA) that they had conducted a recent inspection of hazardous materials shipment to determine compliance with the Hazardous Materials Regulations (HMR) as found in Title 49, Code of Federal Regulations (49 CFR), parts 171-180 (49 CFR 171-180).</p> <p>Based on the information obtained during this inspection on July 25, 2013, the FAA concluded that a possible violation of the HMR may have occurred. Specifically, Lawrence Livermore National Laboratory located at 7000 East Avenue in Livermore, CA offered a hazardous materials shipment to FedEx Express on July 24, 2013. The shipment was transported by air to Bradley International Airport in E. Windsor Locks, CT on Flight 1747 for delivery to ZYGO Corp in Middlefield, CT. This shipment, air waybill 487174095464, was prepared by a LLNL employee and contained 5 liters of UN2922, corrosive liquid, toxic, n.o.s (Polyoxypropylenetriamine), 8(6.1), III. This liquid shipment was in a UN specification drum that appeared to be meant for solid shipments of hazardous material.</p>

2. Compliance

Table 2-4. (cont.) Environmental Occurrences reported under the Occurrence Reporting System in 2013.

Date(a)	Occurrence category/group	Description
09/19/13	Significance Category SC4 Occurrence under Group 9(1) OR 2013-0040	<p>On September 19, 2013, LLNL received a Notice of Violation (NOV) from the Livermore/Pleasanton Fire Department (LPFD) following a Certified Unified Program Agency (CUPA) inspection. The NOV concerned a label on a one-gallon hazardous waste container that was not properly filled out (pursuant to regulation 22 CCR § 66262.32). The container was an appropriate type for the waste and sealed properly. The violation was found during the CUPA inspection of LLNL facilities that took place between September 17-19, 2013. The label on the container when found stated only "used solvent wipes."</p> <p>The incorrect label was immediately removed and replaced with a fully completed hazardous waste label, in the presence of the CUPA inspector.</p>
10/21/13	Significance Category SC4 Occurrence under Group 9(1) OR 2013-0045	<p>On October 21, 2013, LLNL received an inspection report from the LPFD Underground Storage Tank (UST) CUPA. The inspection was performed in August of 2013 and sited two violations at the underground gasoline storage tanks near Building 611. The two violations were noted in the inspection report as follows:</p> <ol style="list-style-type: none"> 1) Failure of the Site 200 UST # 611-G3U1 (E85) S2 Sensor to alarm when tested. The defective liquid leak sensor was replaced during the inspection by the certified contractor and was tested and passed. 2) A leak was observed in the turbine sump secondary containment. A Corrective Action Plan was submitted and the repairs completed in December 2013.

^(a) Date the occurrence was categorized not discovered.

Contributing Authors

Joe Byrne, Steven Cerruti, Valerie Dibley, Jennifer Doman, Craig Fish, Allen Grayson, Hank Khan, Greg Lee, Jennifer C. Nelson, Lisa Paterson, Vicki Salvo, Bill Schwartz, Stan Terusaki, Rinaldo Veseliza, Kent Wilson, Joseph Woods, Peter Yimbo.

This page is intentionally left blank.