HAZARDOUS MATERIALS BUSINESS PLAN

for the

Joint Genome Institute

March 2016

Lawrence Berkeley National Laboratory, #1 Cyclotron Road, Berkeley, CA 94720

Joint Genome Institute (CERSID: 10228927)

Facility Information **Submitted Feb 24, 2016**

Submitted on 2/24/2016 3:07:40 PM by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

- Business Activities
- Business Owner/Operator Identification
- Miscellaneous State-Required Documents
    - *2016 Hazardous Waste Generator Reporting Form* (Adobe PDF, 1429KB)

Hazardous Materials Inventory **Submitted Feb 24, 2016**

Submitted on 2/24/2016 3:07:40 PM by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

- Hazardous Material Inventory (13)
- Site Map (Official Use Only)
    - *Annotated Site Maps (Official Use Only)* (Adobe PDF, 2991KB)

Emergency Response and Training Plans **Submitted Feb 24, 2016**

Submitted on 2/24/2016 3:07:40 PM by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

- Emergency Response/Contingency Plan
    - *JGI_ISM_Plan* (Adobe PDF, 3080KB)
    - *Spill Prevention, Control and Countermeasure Plan* (Adobe PDF, 6561KB)
    - *Contingency Plan for WAA JGI B100* (Adobe PDF, 9848KB)
    - *Contingency Plan for WAA at JGI B400* (Adobe PDF, 11417KB)
    - *JGI Emergency Response Guide with contacts* (Adobe PDF, 58KB)
    - *LBNL Comprehensive Emergency Management Plan* (Adobe PDF, 1828KB)
    - *Emergency Response/Contingency Plan - LBNL JGI Walnut Creek* (Adobe PDF, 302KB)
    - *LBNL Protective Action Plan* (Adobe PDF, 1411KB)
- Employee Training Plan
    - *LBNL PUB 3000 Ch 24 EHS Training Program* (Adobe PDF, 405KB)
    - *LBNL Employee Training LBL0010* (Adobe PDF, 83KB)

Aboveground Petroleum Storage Act **Submitted Feb 24, 2016**

Submitted on 2/24/2016 3:07:40 PM by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

- Aboveground Petroleum Storage Act Documentation
    - *Aboveground Petroleum Storage Act Documentation_JGI 2015* (Adobe PDF, 71KB)

Site Identification

Joint Genome Institute
2800 Mitchell Dr
Walnut Creek, CA 94598
County
Contra Costa

CERS ID
10228927
EPA ID Number
CAD041841933

Submittal Status

Submitted on 2/24/2016 by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

Hazardous Materials

Does your facility have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or is regulated under more restrictive inventory local reporting requirements (shown below if present); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	**Yes**

Underground Storage Tank(s) (UST)

Does your facility own or operate underground storage tanks?	**No**

Hazardous Waste

Is your facility a Hazardous Waste Generator?	**Yes**
Does your facility treat hazardous waste on-site?	**No**
Is your facility's treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	**No**
Does your facility consolidate hazardous waste generated at a remote site?	**No**
Does your facility need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	**No**
Does your facility generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	**No**
Is your facility a Household Hazardous Waste (HHW) Collection site?	**No**

Excluded and/or Exempted Materials

Does your facility recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	**No**
Does your facility own or operate ASTs above these thresholds? Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	**Yes**
Does your facility have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	**No**

Additional Information

Please be aware that E.O. Lawrence Berkeley National Laboratory (LBNL) is a federal facility owned by the Department of Energy (DOE). In certain areas of environmental regulation, Congress has directed federal facilities to comply with state and local requirements and pay reasonable services charges. In the area of hazardous materials planning and reporting, however, while DOE facilities must comply with federal Emergency Planning and Community Right-to-Know Act (EPCRA) requirements pursuant to an Executive Order, no waiver of sovereign immunity from state and local regulation has occurred. Despite the lack of a sovereign immunity waiver, LBNL voluntarily complies with state hazardous materials planning and reporting.

Facility/Site

Joint Genome Institute
2800 Mitchell Dr
Walnut Creek, CA 94598

CERS ID
10228927

Submittal Status

Submitted on 2/24/2016 by *Ned Borglin* of LAWRENCE BERKELEY NATIONAL LABORATORY (BERKELEY, CA)

Identification

E.O. Lawrence Berkeley National Laboratory

Operator Phone	Business Phone	Business Fax
(510) 486-4000	(925) 296-5670	(925) 927-2554

Beginning Date	Ending Date	
1/1/2016	12/31/2016	
Dun & Bradstreet	**SIC Code**	**Primary NAICS**
170143759	8731	541711

Facility/Site Mailing Address

2800 Mitchell Dr
Walnut Creek, CA 94598

Primary Emergency Contact

Stephen Franaszek
Title
Safety Coordinator

Business Phone	24-Hour Phone	Pager Number
(925) 296-5807	(925) 980-1528	

Owner

U.S. Dept of Energy - Berkeley Site Office
(510) 486-4373
1 Cyclotron Road MS 90R1023 - ATTN: Mary Gross
Berkeley, CA 94720

Secondary Emergency Contact

Greg Stanley
Title
Facility Manager

Business Phone	24-Hour Phone	Pager Number
(925) 296-5788	(925) 997-4834	

Billing Contact

Ron Pauer
(510) 486-7416 ropauer@lbl.gov
1 Cyclotron Road MS 75B0101
Berkeley, CA 94720

Environmental Contact

Ron Pauer
(510) 486-7416 ropauer@lbl.gov
1 Cyclotron Road MS 75B0101
Berkeley, CA 94720

Name of Signer	Signer Title	Document Preparer
Jack Salazar	Deputy Division Director, EHS	Ned Borglin

Additional Information

Locally-collected Fields

Some or all of the following fields may be required by your local regulator(s).

Property Owner

Hall Equities Group
Phone
(925) 933-4000
Mailing Address
1855 Olympic Boulevard, Suite 300
Walnut Creek, CA 94596

Assessor Parcel Number (APN)
143-040-103-2
Number of Employees
260
Facility ID
07-000-770310

CONTRA COSTA
HEALTH SERVICES

2016 HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY NAME: LBL Production Sequencing Facility
Joint Genome Institute

SITE ID: 770310

CERS ID: 10228927

EPA ID: CAD041841933

This form is required to be submitted if your facility had any amount of hazardous waste disposed of from your facility in 2015. Disposal includes picked up by a licensed transporter or taken to a certified collection location. If your facility is in the Hazardous Waste Generator Program, but no hazardous waste was disposed of in 2015, this form is still required.

Determine the amount of hazardous waste your business disposed of during the 2015 calendar year.

Total Tonnage of Hazardous Waste Disposed During 2015: (calculation guide on back)

1.6 Tons

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: Maram Kassis

Date: 1/28/2016

Print Name: Maram Kassis

INSTRUCTIONS FOR COMPLETING THIS FORM ON BACK

SUBMITTAL OPTIONS – You may submit this form in one of the following ways:

1. Upload PDF document to your 2016 CERS submittal under **Miscellaneous State Required Documents** in the Facility Information section. (If you are submitting via CERS, no signature is required.)
2. Fax to 925-646-2073
3. Email PDF document to ccchazmat@hsd.cccounty.us
4. Mail to: Hazardous Materials Programs
   4585 Pacheco Blvd, Suite 100
   Martinez, CA 94553

Instructions for Completing the Hazardous Waste Generator Reporting Form

Please read these instructions carefully before completing the reporting form. If you have questions regarding the form, contact the Hazardous Materials Programs Office at (925) 335-3200.

The Hazardous Waste Generator Reporting Form is due to the Hazardous Materials Programs on or before **March 1, 2016. Forms submitted or postmarked after March 1, 2016, may be subject to a 50% late fee.** Do not send payments at this time. Retain a copy for your records. Businesses will receive a single invoice for all applicable CUPA program fees.

Hazardous waste is defined as any waste that is listed or meets the criteria of toxicity, corrosivity, ignitability, or reactivity as defined by the California Code of Regulations, Title 22, Chapter 11.

1. Determine the amount of hazardous waste disposed of by your business during the **2015** calendar year. Each site must complete a separate reporting form. Hazardous waste manifests, consolidated manifests, and/or receipts will provide you this information.

2. These guideline conversion factors may be used when calculating tonnage:

a) Number of gallons	X	0.00417 tons / gallon	=	Number of tons
b) Number of cubic yards	X	1.35 tons / cubic yard	=	Number of tons
c) Number of pounds	÷	2000 pounds	=	Number of tons

3. Enter the total tonnage of hazardous waste disposed of during the 2015 calendar year.

4. Businesses producing **ANY** amount of hazardous waste must submit the Hazardous Waste Generator Reporting Form. For example: A facility producing five gallons of hazardous waste in the previous calendar year must complete the reporting form.

5. Businesses that collect used oil from the public under the CalRecycle Program have special reporting rules. Please call CCHSHMP and speak with a Hazardous Materials Specialist for more information.

6. Used oil filters and used fuel filters that are confirmed to be recycled, are exempt from fees. Please call CCHSHMP and speak with a Hazardous Materials Specialist if you have questions.

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS
4585 PACHECO BOULEVARD. - SUITE 100
MARTINEZ, CA 94553

Please contact the Hazardous Materials Programs if you have questions at (925) 335-3200

Hazardous Materials And Wastes Inventory Matrix Report

CERS Business/Org.	**LAWRENCE BERKELEY NATIONAL LABORATORY**	Chemical Location	CERS ID **10228927**
Facility Name	**Joint Genome Institute**	**100**	Facility ID **07-000-770310**
	2800 Mitchell Dr, Walnut Creek 94598		Status **Submitted** on 2/24/2016 3:07 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Quantities: Largest Cont.	Quantities: Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
	CARBON DIOXIDE CAS No 124-38-9	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Pure Days on Site: 365	**3648**	**25.33**	3648 Pressue: Ambient Temperature: Ambient	Waste Code	- Acute Health - Chronic health	CARBON DIOXIDE			124-38-9
	CHLOROFORM CAS No ✓EHS 67-66-3	**Pounds** State: Liquid Storage Container: Steel Drum, Glass Bottle or Jug Type: Pure Days on Site: 365	**10.18**	**3.28**	10.18 Pressue: Ambient Temperature: Ambient	Waste Code	- Reactive - Acute Health - Chronic health	CHLOROFORM		✓	67-66-3
	NITROGEN CAS No 7727-37-9	**Gallons** State: Liquid Storage Container: Other Type: Mixture Days on Site: 365	**84.54**	**21.14**	84.54 Pressue: > Ambient Temperature: < Ambient	Waste Code	- Fire - Pressure Release	NITROGEN			7727-37-9
	NITROGEN CAS No 7727-37-9	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Pure Days on Site: 365	**304**	**304**	304 Pressue: Ambient Temperature: Ambient	Waste Code		NITROGEN			7727-37-9
	NITROGEN CAS No 7727-37-9	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Pure Days on Site: 365	**230**	**230**	230 Pressue: > Ambient Temperature: Ambient	Waste Code	- Pressure Release	NITROGEN			7727-37-9
	NITROGEN CAS No 7727-37-9	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Mixture Days on Site: 365	**304**	**304**	304 Pressue: > Ambient Temperature: Ambient	Waste Code	- Pressure Release	NITROGEN			7727-37-9
	OXYGEN CAS No 7782-44-7	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Mixture Days on Site: 365	**440**	**110**	440 Pressue: Ambient Temperature: Ambient	Waste Code	- Fire	OXYGEN			7782-44-7
	OXYGEN CAS No 7782-44-7	**Cu. Feet** State: Gas Storage Container: Cylinder Type: Mixture Days on Site: 365	**220**	**220**	220 Pressue: > Ambient Temperature: Ambient	Waste Code	- Fire - Pressure Release	OXYGEN			7782-44-7

Hazardous Materials And Wastes Inventory Matrix Report

CERS Business/Org.	**LAWRENCE BERKELEY NATIONAL LABORATORY**	Chemical Location		CERS ID	**10228927**
Facility Name	**Joint Genome Institute**	**100**		Facility ID	**07-000-770310**
	2800 Mitchell Dr, Walnut Creek 94598			Status	**Submitted** on 2/24/2016 3:07 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Largest Cont.	Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
	ZERO AIR	**Cu. Feet**	**1200**	**75**	1200			ZERO AIR			
	CAS No	State: Gas	Storage Container: Cylinder		Pressue: Ambient	Waste Code					
		Type: Pure	Days on Site: 365		Temperature: Ambient						

Hazardous Materials And Wastes Inventory Matrix Report

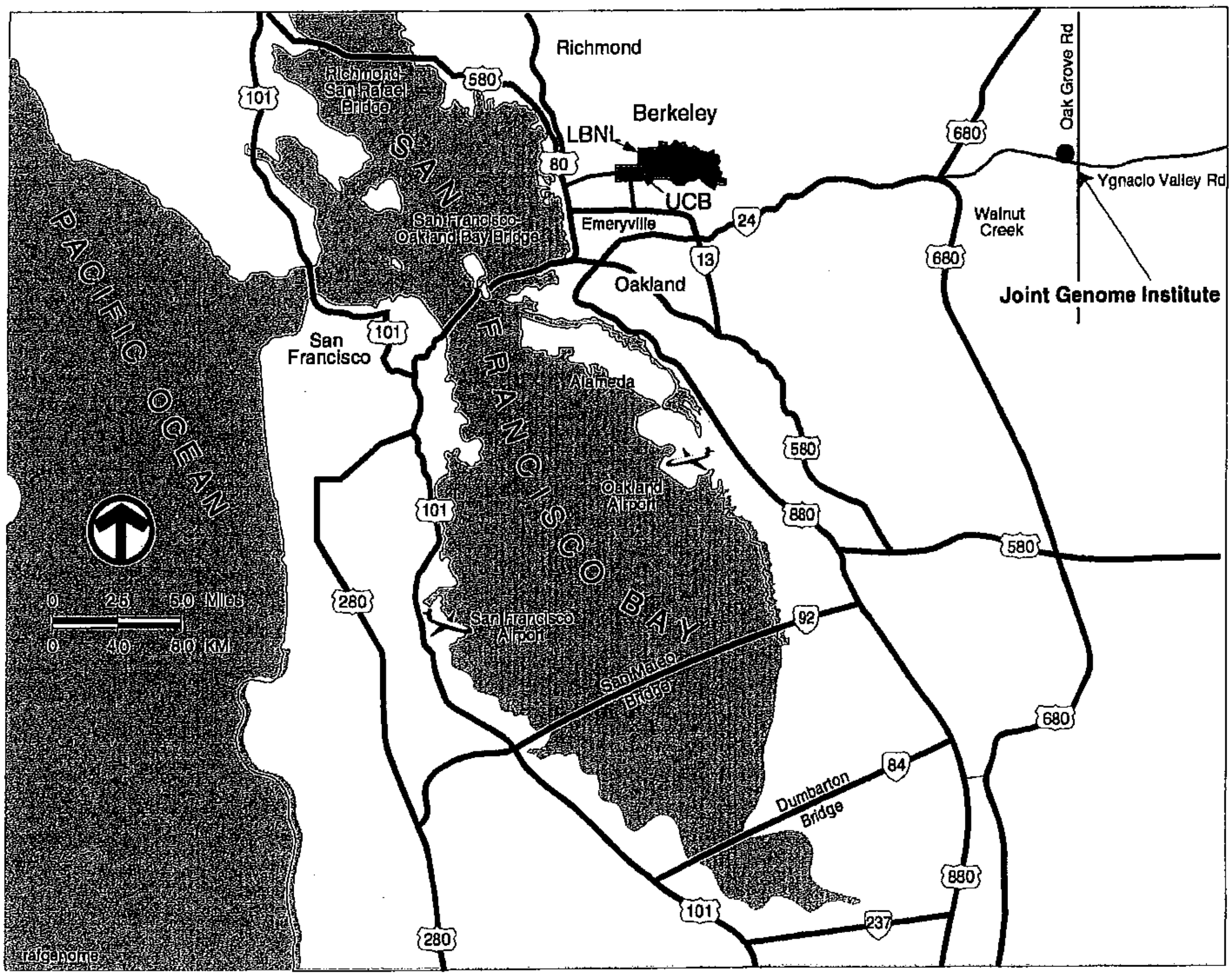
CERS Business/Org.	**LAWRENCE BERKELEY NATIONAL LABORATORY**	Chemical Location		CERS ID	**10228927**
Facility Name	**Joint Genome Institute**	**400**		Facility ID	**07-000-770310**
	2800 Mitchell Dr, Walnut Creek 94598			Status	**Submitted** on 2/24/2016 3:07 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Largest Cont.	Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
	CHLOROFORM CAS No: 67-66-3 ✓ EHS	**Pounds** State: Liquid Type: Pure	**19.04** Storage Container: Steel Drum, Can, Glass Bottle or Jug Days on Site: 365	**1.64**	19.04 Pressue: Ambient Temperature: Ambient	Waste Code	- Reactive - Acute Health - Chronic health	CHLOROFORM		✓	67-66-3
	NITROGEN CAS No: 7727-37-9	**Gallons** State: Liquid Type: Mixture	**121.53** Storage Container: Cylinder Days on Site: 365	**30.38**	121.53 Pressue: > Ambient Temperature: Cryogenic	Waste Code	- Fire - Pressure Release	NITROGEN			7727-37-9
	NITROGEN CAS No: 7727-37-9	**Cu. Feet** State: Gas Type: Mixture	**600** Storage Container: Cylinder Days on Site: 365	**150**	600 Pressue: > Ambient Temperature: Ambient	Waste Code	- Pressure Release	NITROGEN			7727-37-9

Hazardous Materials And Wastes Inventory Matrix Report

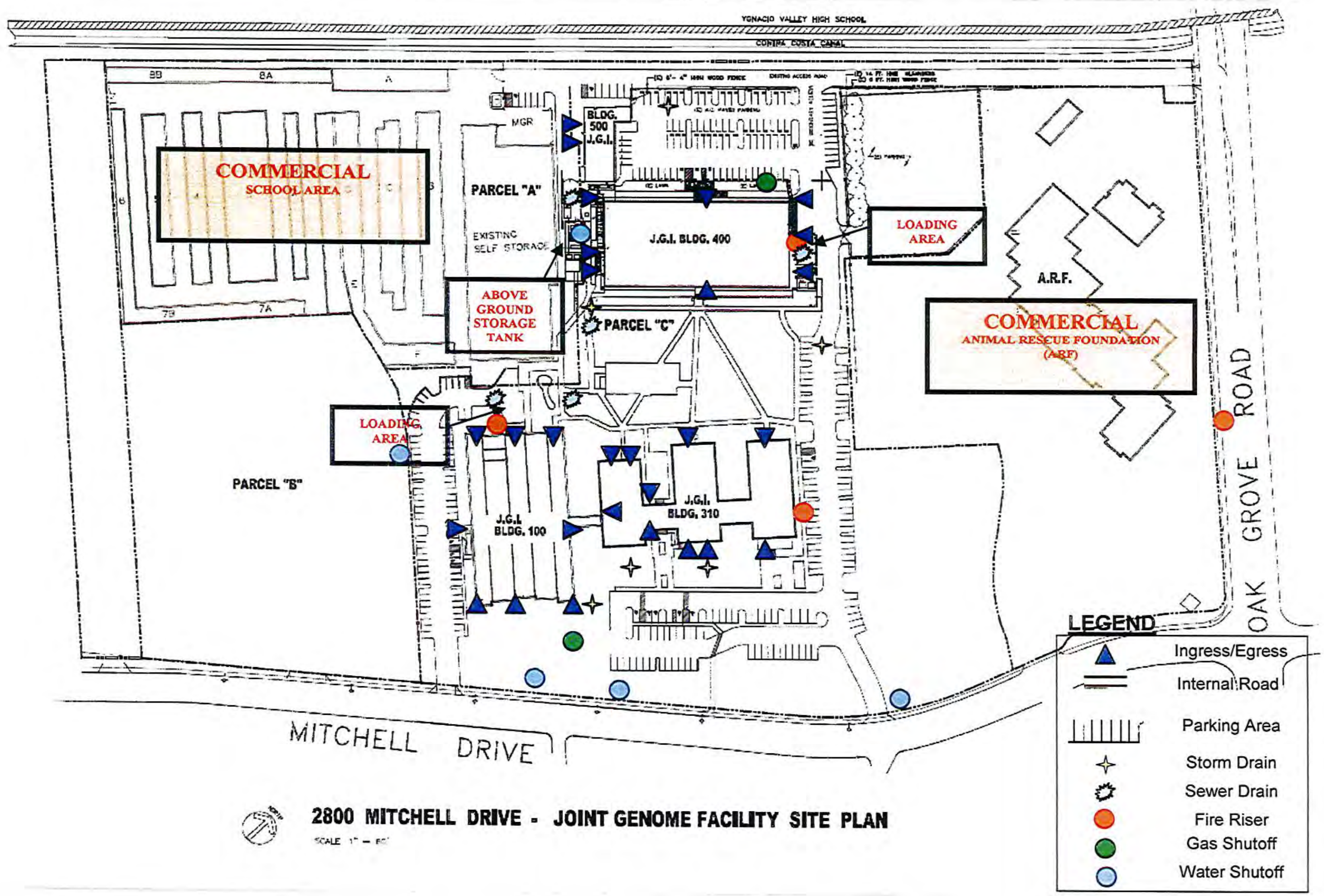
CERS Business/Org.	**LAWRENCE BERKELEY NATIONAL LABORATORY**	Chemical Location	CERS ID **10228927**
Facility Name	**Joint Genome Institute**	**JGI 400**	Facility ID **07-000-770310**
	2800 Mitchell Dr, Walnut Creek 94598		Status **Submitted** on 2/24/2016 3:07 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities Max. Daily	Largest Cont.	Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only) Component Name	% Wt	EHS	CAS No.
DOT: 3 - Flammable and Combustible Liquids Combustible Liquid, Class II	**Diesel Fuel** CAS No 68334-30-5	**Gallons** State: Liquid Storage Container: Aboveground Tank Type: Pure Days on Site: 365	**4000**	**4000**	4000 Pressue: Ambient Temperature: Ambient	Waste Code	- Fire - Chronic health				



Map 2.0 San Francisco Bay Area

For more detailed maps please contact
Ron Pauer at ropauer@lbl.gov or 510-486-7614.



2800 MITCHELL DRIVE - JOINT GENOME FACILITY SITE PLAN

Attachment Two

JGI Integrated Safety Management (ISM) Plan

DOE JOINT GENOME INSTITUTE
US DEPARTMENT OF ENERGY
OFFICE OF SCIENCE

Joint Genome Institute
Integrated Safety Management Plan

July 2012

The JGI Integrated Safety Management (ISM) Plan was reviewed and revised in June of 2012. The changes in content are listed below:

- Simplified and shortened plan and eliminated redundancies
- Combined Work Authorization and Training sections
- Added Work Alone section
- Updated names
- Incorporated feedback from last self-assessment
- Revised listing of ergonomic support

Stephen Franaszek JGI/Genomics Division Safety Coordinator	8/27/12 Date
Ray Turner JGI/Genomics Division Deputy Director of Operations	8/27/12 Date
Eddy Rubin Genomics Division Director	8.27/12 Date

Table of Contents

Integrated Safety Management (ISM) Plan Scope

The Division Integrated Safety Management Plan (ISM) is the reference document developed to describe the Integrated Safety Management program for the Joint Genome Institute (JGI) Located in Walnut Creek, California. This plan describes the mechanisms that will be applied at the JGI to ensure that LBNL safety policies and requirements are properly implemented. The Laboratory's ES&H policies and requirements are contained in the following:

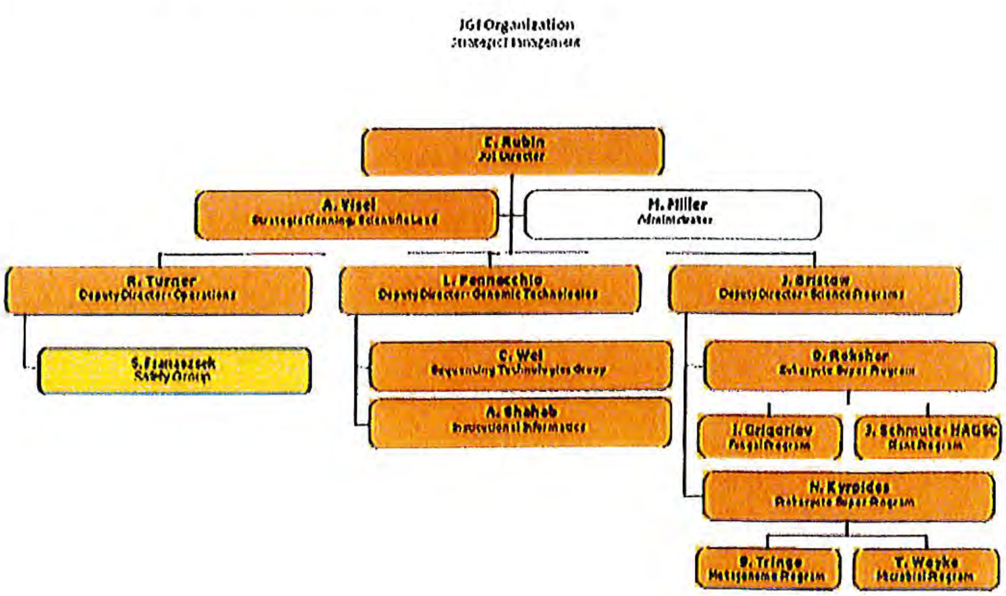
- Regulations and Procedures Manual (RPM) https://commons.lbl.gov/display/rpm2/Home
- Health and Safety Manual (LNBL/PUB-3000) http://www.lbl.gov/ehs/pub3000/

This ISM plan covers only the Genomics Division Operations at the Joint Genome Institute Facility at Walnut Creek, California. The safety related activities at Building 84 on the LBNL site are covered under the safety program described in the Life Sciences Division ISM Plan. This division in safety program management is due to the geographic separation of the Joint Genome Institute (JGI) in Walnut Creek and the Building 84 Genomics-West program at building 84 in Berkeley, where the Safety Coordinator duties are the responsibility of the Life Sciences Division Safety Coordinator.

JGI Mission

The Joint Genome Institute's overarching mission is to provide integrated high-throughput sequencing and computational analysis to enable genomic-scale/systems-based scientific approach to DOE-relevant challenges in energy and the environment.

Organizational Chart for the JGI



Introduction

This plan outlines how the operations at the JGI/Genomic Division Facility in Walnut Creek follow the Integrated Safety Management (ISM) model. The ISM guiding principles and core functions are listed below:

Seven Guiding Principles of ISM
1. Line management responsibility for safety (EH&S) - Line management is responsible for the protection of the public, the workers, and the environment. Division line managers are responsible for integrating EH&S into work and for ensuring active communication up and down the management line and with the workforce.
2. Clear roles and responsibilities – Clear and unambiguous lines of authority and responsibility for ensuring ES&H are established and maintained at all organizational levels within the Division, and for work performed by its contractors.
3. Competence commensurate with responsibilities – Personnel must possess the experience, knowledge, skills, and abilities to discharge their responsibilities. Division management to ensure that the appropriate depth and breadth of technical talent is available to periodically evaluate competencies. Competence includes training, experience, and fitness for duty.
4. Balanced priorities – Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting the public, workers, and the environment is a priority whenever activities are planned and performed.
5. Identification of safety standards and requirements – Before work is performed, the associated hazards are evaluated and an agreed-upon set of standards and requirements are established. These standards, if properly implemented, provide adequate assurance that the public, workers, and environment are protected from adverse consequences.
6. Hazard controls tailored to work being performed – Administrative and engineering controls to prevent and mitigate hazards are tailored to the work and associated hazards being performed.
7. Operations authorization – The conditions and requirements that must be satisfied for operations to be initiated and conducted are clearly agreed upon.

Five Core Functions of ISM
1. Plan for the work – Clear definition of the tasks to be accomplished as part of any given activity
2. Analyze the hazards – Analysis and determination of the hazards and risks associated with any activity; in particular, risk to employees, the public, and the environment.
3. Develop and implement hazards controls – Controls sufficient to reduce the risks associated with any activity to acceptable levels.
4. Perform work within controls – Conduct of the tasks to accomplish the activity in accordance with the established controls.
5. Provide feedback and continuous improvement – Implementation of a continuous-improvement cycle for the activity, including incorporation of employee suggestions, lessons learned, and employee and community outreach, as appropriate.

General Responsibilities and Accountability for All Employees

Employees, participating guests, contract labor, subcontractors, and visitors are responsible for following the ISM system, ensuring that all activities are carried out in a safe manner, and for knowing and following the ES&H requirements that apply to their work. They are expected to work safely, determine which ES&H requirements apply to their work, and to cooperate with the division ES&H activities. This responsibility and accountability cannot be delegated. LBNL/PUB-811, Integrated Safety Management for Employees, Contractors, Participating Guests and Visitors: Handbook of Safety Policy, Requirements and Technical Guidance, is a reference guide that has been prepared and made available by the EH&S Division through the Web at http://www.lbl.gov/ehs/pub811/index.html.

All contracted work under division auspices must also be accomplished in a safe manner. Managers responsible for the work must ensure that qualified contractors/contract labor/service vendors are selected, hazards are identified, and work is performed safely within its assigned space. Individuals will need to consult with qualified specialists (e.g., division ES&H Safety Coordinators and EH&S Division staff) to resolve any questions about ES&H requirements. If there is any question about the safety or environmental impact of an activity, the work should be stopped and the issue(s) resolved before proceeding. The specific policy and procedure for stopping work is found in LBNL/PUB-3000, Chapter 1, Section 1.6 (***Work Process C. Stopping Unsafe Work***).

Director's Responsibilities

The JGI Director is ultimately responsible and accountable for assuring that all operations are conducted in a manner that protects the health and safety of employees, guests, visitors and the environment, and is in compliance with all LBNL EH&S policies and requirements. The Director may request assistance from Deputy Directors, JGI Safety Coordinators and others as needed, but retains overall responsibility and authority for EH&S management and performance within the Division.

The Director for the JGI-Walnut Creek site has additional duties related to the DOE Occurrence Reporting and Processing System (ORPS) include:

- Timely reporting of adverse and/or abnormal occurrences that meet the criteria of a Department of Energy (DOE) ORPS System
- The final decision that a given incident is a reportable through ORPS
- Approval of the final ORPS report before it is submitted to the DOE ORPS database
- Ensuring occurrence reporting procedures are properly implemented and corrective actions are instituted to prevent incident recurrence

Safety Coordinator Responsibilities

Due to the geographic separation of the Joint Genome Institute in Walnut Creek and the Building 84 Genomics program at Berkeley, Safety Coordinator duties for the Genomics Division are split. A designated Safety Coordinator for the JGI is responsible for the JGI Walnut Creek location and reports directly to the JGI Deputy Director of Operations. The Life Sciences Division (LSD) Safety Coordinator is responsible for the Genomics West Division safety program in Building 84, reporting in that capacity directly to the Genomics Division Director.

Both the JGI and Building 84/LSD Safety Coordinators are responsible for administering the ES&H program in their respective areas according to the specific responsibilities for Safety Coordinators listed in the PUB-3000 Section 1.3.2.9.

The Safety Coordinator for the JGI-Walnut Creek site has additional duties due to the geographical distance from the LBNL main site. These are specific to the JGI site and include:

- Developing and presenting the site specific training including the EH&S Safety Orientation Course (PGF0010 and PGF0010G)
- Coordination of EH&S training sessions to be conducted at the JGI Walnut Creek site to minimize travel between sites by offering JGI specific classes
- Ensuring that all environmental business requirements (listed below) for the JGI Walnut Creek Campus are updated or renewed as needed.

    - *Central Contra Costa County Sanitary District*-Wastewater Discharge Permit, Periodic Compliance Reports, and SLUG Discharge Plan
    - *Contra Costa County Environmental Health Department*-Hazardous Materials Business Plan

- Management and Coordination of the following JGI Specific Programs:

    - Subcontractor Job Hazard Analysis (SJHA) Program (PUB-3000, Chapter 31)
    - JHA and Training Compliance Program
    - JGI Personal Protective Equipment Program
    - JGI Ergonomics Program
    - Centralized Chemical Inventory Program
    - Emergency Response Program
    - Business Continuity Plan
    - Hazard Door Signs and Emergency Procedure Postings

- Coordination and support for implementation of the LLNL/LBNL/JGI Safety Program Memorandum of Understanding (MOU).

Safety Advisory Committee Representative Responsibilities

The Genomics Safety Advisory Committee (SAC) representative must ensure that information regarding changes in EH&S policies are shared with Senior Management, Safety Committee members and with the JGI Safety Coordinator. The SAC Representative's Responsibilities are listed below:

- Attend SAC meetings and notify Deputy Director of Operations if meetings cannot be attended.
- Brief Senior Management on important policy related votes that the committee is scheduled to take. Represent the interest of the Director and the Deputy Directors during SAC votes.
- Attend Safety Committee and Senior Management Team meetings, and present a briefing on changes in policies.

EHS Division Liaison Responsibilities

The EHS Division Liaison serves as the prime point of contact with the Genomics Division, and interfaces primarily but not exclusively with the JGI Safety Coordinator. The Liaison is responsible for ensuring that the appropriate technical support is provided to implement and interpret Berkeley Lab ES&H policies. The specific responsibilities of the Genomics Division EHS Liaison are outlined in the PUB-3000, Section 1.3.2.10.

Facility Manager Responsibilities

Facility Manager for the JGI-Walnut Creek site has additional duties due to the geographical distance from the LBNL main site. Although many of these duties are equivalent to duties of a LBNL Building Manager, some specific duties are listed below:

- Ensuring compliance with all EHS related facility requirements and programs including the LBNL Electrical Safety and LOTO Programs, LBNL Subcontractor Job Hazard Analysis (SJHA) Program and LBNL Construction Safety Program
- Ensuring fire suppression systems and equipment meet requirements and are maintained

Manager/Supervisor General Responsibilities (e.g. group leaders and formal supervisors, as appropriate)

Managers and Supervisors must ensure the following:

- An employee's skill, knowledge, and training are commensurate with the hazards in his or her work environment. Managers/Supervisors should meet with each employee annually and review their qualifications and training, and discuss safety issues and the corresponding prevention or mitigation measures.
- All employees who work at the JGI site for more than 30 days a year complete a LBNL Job Hazard Analysis (JHA) and required web based training within the first two weeks of employment, and update their JHA every 12 months. The JHA must list the tasks that will be performed, and identify the hazards, risks, and controls associated with those tasks. Managers/Supervisors must ensure that all controls listed on a JHA are in place and are being followed by their employees.
- Employees have adequate supervision and training to perform work safely and according to EHS requirements.
- Employees who have not completed safety training, or have expired safety training are directly supervised while engaging in tasks related to the missing or overdue training.
- Both LBNL and JGI ES&H requirements are integrated into work activities. That policies and associated safety controls are followed, and the necessary resources/controls are provided in a timely manner to perform work safely.
- All work is has valid and accurate work authorization documentation and specialized EH&S permits as required by LBNL PUB-3000. Work Authorization documentation may include JHAs, SJHAs, Activity Hazard Documents, and Biological Use Authorizations, Registrations, or Notifications. Work requiring EH&S permits includes Live Electrical work, LOTO, laser work, work with open flames, and biological work.
- All work by subcontractors, service vendors, and guests meets LBNL EH&S requirements, hazards are identified and communicated, work is performed safely, and a valid Job Hazard Analysis (JHA), Subcontractor Job Hazard Analysis (SJHA), or Construction JHA is in place before work is performed.

- That employees follow the LBNL Work Alone Policy described in the PUB-3000, Section 5.4, that employees do not work alone when the mitigated hazards associated with their work could incapacitate them to such a degree that they cannot "self-rescue" themselves or activate emergency services.
- Records of all On the Job Training are retained, including course outlines and attendance sheets.
- Both LBNL and JGI policy requirements for Personal Protective Equipment (PPE) are enforced and followed.
- Quarterly safety walkthroughs are completed and unsafe work practices and conditions are identified. An online form for documenting walkthroughs is available on the JGI EHS website under the "Walkthrough Website" link.
- New projects and facilities are reviewed for potential hazards and environmental impacts, and that safety and ergonomic risk are considered while in the planning stage.
- ES&H deficiencies and corrective actions from Injury Reviews and Supervisor's Accident Analysis Report, Audits, and Safety Walkthroughs are entered into LBNL's Corrective Action Tracking System (CATS) and tracked to completion.
  Periodic safety meetings are held, either as part of routine group meetings or as dedicated safety meetings.
- Workloads are managed and distributed appropriately to avoid ergonomic injuries. Ergonomic issues are discussed as part of 1:1 meetings, safety walkthroughs and staff meetings.
- Satellite Accumulation Areas for hazardous waste are managed and (SAAs) maintained in a state of constant compliance.
- Incident/injury reviews, SAAR meetings, and Case Review meeting are attended by the appropriate manager or supervisor, and employee.
- EHS documentation and records are accurate and maintained. This includes:
    - Chemical inventory records in the Chemical Management System (CMS),
    - Hazards Management System (HMS) equipment and operations database
    - Corrective Actions Tracking System (CATS)

Work Lead Responsibilities

A Work Lead is an LBNL employee who is authorized by their Line Management to serve in a supervisory capacity. Work Leads need not be line managers, Higher Education Employer-Employee Relations Act (HEERA)-designated Supervisors, or LBNL Employees. All Work Leads are Safety Line Managers. Some of their duties are listed below:

- Directing, training, and/or oversees the work and activities of one or more workers. Providing instruction on working safely.
- Providing precautions necessary to use equipment and facilities safely.
- Assuming Manager/Supervisor responsibilities that have been delegated.
- Ensuring that employees they supervise follow the LBNL Work Alone Policy described in the PUB-3000, Section 5.4, that prohibits employees from working alone when the mitigated hazards associated with their work could incapacitate them to such a degree that they cannot "self-rescue" themselves or activate emergency services.

Area Safety Leader (ASL) Responsibilities

ASLs are designated by Managers and Supervisors to serve as the central coordinator for all Environmental Health and Safety (EHS)-related requirements for an assigned technical area. ASLs are in charge of implementing the following requirements.

- Maintaining accurate chemical inventories in the CMS database for their assigned areas.
- Maintaining an accurate list of hazards in the HMS database for their assigned area(s).
- Ensuring all compliance issues and corrective actions resulting from walkthrough inspections and audits are entered into the CATS database and tracked through to completion.
- Ensuring door postings for their assigned area(s) are accurate and updated as necessary to reflect current information.
- Maintaining all hazardous waste SAAs in their assigned area(s) and completing a monthly documented compliance check.
- Assisting Area Supervisors with communicating EHS policies and practices to colleagues working in their assigned area(s).
- Actively participates in ASL group meetings.

Employee Responsibilities

- Adhere to all LBNL and JGI EH&S policies and procedures inducing the policies for use of Personal Protective Equipment.
- Complete a JHA with Supervisor or Work Lead within two weeks of initial employment and revise the JHA on an annual basis or whenever job tasks or work lead change.
- Complete all required training before initiating related work. Work related to missing or overdue training must be directly supervised by trained personnel.
- Review and update your JHA on an annual basis, or sooner if their job activities change.
- Exercise LBNL's "Right to Stop Unsafe Work" policy, whenever there is an imminent hazard to life, safety or health. These procedures are found in PUB 3000, Chapter 1 – Section 1.6 (Stopping Unsafe Work).

Student Responsibilities

The JGI ISM plan does not distinguish between students and employees. Students are afforded the same protections and assume the same obligations and responsibilities (listed above) as employees.

Matrix Employees Responsibilities

Matrix employees' supervisors from their home division or department retain all environmental, health and safety responsibilities pertaining to matrix employees, except where some of the responsibilities have been transferred to the host division or department through a formal MOU. When applicable, home and host supervisors are to identify their responsibilities for employee safety in the MOU.

Safety Committees and Employee Led Safety

Safety Committee Membership

The JGI Safety Committee is comprised of the JGI Director, three JGI Deputy Directors, Managers and Supervisors, and staff from all three JGI Departments. This committee meets every other month to identify and discuss ES&H-related concerns and to disseminate essential operations-level information to the staff. The Safety Committee meetings include the following agenda items:

- Review Safety Metrics including recordable injuries and training and JHA compliance
- Review recent LBNL or JGI incidents, injuries and Lessons Learned
- Reports from the Area Safety Leader Group, Safety Culture Group, and Emergency Response Team
- Presentations and discussions on new or changed EH&S policies
- JGI internal EH&S policies and procedures
- Division Self-Assessment Process
- Division ISM Plan
- Safety Concerns or issues from the floor

The current Safety Committee members are:

Stephen Franaszek	Safety Coordinator
Cheryl Chu	Assistant Safety Coordinator/EHS Technician
Terri Bartolome	Safety Administrator
Melanie Alexandre	Certified Ergonomist
Miranda Harmon-Smith	Safety Culture Working Group Chair
Robert Otillar	Emergency Response Working Group Chair
Scott Clingenpeel	ASL Committee Representative
Ray Turner	Deputy Director Operations
Susan Lucas	Strategic Planning, Operations & Capabilities Group
Greg Stanley	Facilities Manager
Denise Yadon	Administrative Services Manager
Chris Watchmaker	Human Resources
Simon Roberts	Instrumentation Group
Len Pennacchio	Deputy Director Genomics Technologies
Erika Lindquist	Genomics Technology
Hope Tice	Genomics Technology
Kanwar Singh	Advanced Sequencing Group
Chris Daum	Sequencing Platforms Group
Matt Hamilton	Synthetic Biology

Jim Bristow	Deputy Director Science Programs
Susan Bernstein	Structural Genomics Group
Janey Lee	Single Cell Group
Robert Riley	Fungal Group
Dino Liolios	Genomics Standard Group
Eddy Rubin	Director
Mary Miller	Building 84 Representative

JGI Safety Committee Documentation Websites

Charter:
https://wiki.jgi-psf.org/twiki/bin/view/JGIwiki/EHSPoliciesAndProcedures#SafetyCommitteeCharter

Upcoming Safety Committee Agenda
https://docs.google.com/a/lbl.gov/document/d/1m_xBYtFneiz-6QphwUqQUEOg-A4TCrXP3knfEqeDiyY/edit

Safety Committee Meeting Minutes
https://docs.google.com/a/lbl.gov/folder/d/0B2pAuJccdazfYjBmM2YyMTEtZmJiZC00MGFjLWEwMTYtNzUwMWRlNzA4MWRi/edit

The Safety Culture Group

The Safety Culture Group is a subgroup of the Employee Safety Committee that carries out the below Safety Committee activities. The Safety Culture Group meets at least every other month on months the entire safety committee does not meet or as frequently as needed. Safety Culture Group activities are listed below:

- Conducts routine Employee Safety Committee business not covered in full meetings
- Recognizes JGI employees who have had an impact on safety by nominating them for spot awards or for a JGI Safety Culture (internal) award
- Promotes safety and ISM through activities including safety fairs, safety theme months/weeks
- Conducts routine surveys for feedback to provide management and the internal Safety Team at bi-monthly Safety Committee meetings.
- Develops informational safety and ergonomic-related "potty training" flyers.

Emergency Response Team

The Emergency Response Team's (ERT) primary function is to provide initial response in the event of a significant disaster or emergency until expert emergency response services become available. A sub-set of ERT members hold Emergency Action Plan (EAP) meetings bi-weekly to plan and develop the ERT activities. Specific responsibilities of this team include:

- Assist employees using FEMA – CERT methods when expert emergency responders are unavailable during a significant emergency or disaster.

- Assist expert emergency responders when they become available during a significant emergency or disaster.
- Conduct yearly evacuation drills in conjunction with LBNL site-wide emergency drills.
- Coordinate the safe evacuation of all JGI facilities when necessary.
- Maintain a subset of CERT, First-Aid, and CPR-trained employees on site.
- Maintain an effective internal communication system in the event of an emergency or disaster.

Employee, Guest and Visitor Authorization, Qualification, and Training

Job Hazard Analysis (JHA)

The LBNL Job Hazard Analysis (JHA) system is the primary system to authorize work at LBNL and at the JGI when the employee or guest will be working on site for at least 30 days. The JHA identifies work tasks and required safety controls including safety training. The LBNL JHA/Training Database is used to document completion of training requirements. Upon arriving at the JGI, employees and guests have 15 days to complete the JHA process. Until valid JHA is in place, and all web-based training is completed, employees and guests should be directly supervised to ensure that they are working safely and all LBNL requirements are met.

Employees and guests who exclusively attend meetings and/or have remote access and from another work site should be "Opted Out" of the JHA system providing they are perfoming work under a separate EHS arrangement. The LBNL Job Hazard Analysis online database can be accessed at the following link: https://ehswprod.lbl.gov/ehstraining/jha/login.aspx

Subcontractor Job Hazard Analysis (SJHA)

This system is used to authorize work at the JGI for subcontractors or guests who will be working at the JGI for less than 30 days each calendar year. The Subcontractor Job Hazard Analysis (SJHA) system is outlined in Chapter 31 of the PUB-3000. The SJHA process at the JGI is directly managed by the Safety Coordinator who reviews all SJHA paperwork, facilitated a pre-job meeting, identifies if LBNL permits or authorizations are needed, provides the subcontractor/guest with required training, advises the requester and the subcontractor/guest on LBNL work requirements, and records all documentation. JGI Procurement department will not complete the procurement process for a service until the Safety Coordinator has approved of the SJHA documentation. The requester of the SJHA is responsible for the safety related oversight or the subcontractor/guest. The LBNL Subcontractor Job Hazard Analysis online database can be accessed at the following link: https://ehswprod.lbl.gov/sjha/login.aspx

Line managers are responsible for analyzing work of employees under their direction, for assuring that JHA or SJHA documentation has been completed and contains activity level hazard descriptions and controls, and that proper training for safe conduct of the work is identified and completed. Until an individual has a valid JHA or SJHA in place and has been properly trained, he or she shall work under the direct supervision of trained personnel.

Telecommuting

Per LBNL policy [RPM 2.23(D) (5)], telecommuting is a viable work option under certain conditions. Telecommuting is allowed providing all of the conditions are met as follows:

- An "Agreement & Authorization for Telecommuting" must be established between an employee and his/her supervisor. This form is available through Human Resources.
- The employee must maintain their offsite workspace in a safe condition free from hazards.
- There must be completion of an ergonomic assessment of the telecommuting work area(s). This will be accomplished by sending pictures of the work area(s) to the JGI Ergonomist, who is responsible for suggesting modification and adjustments that will minimize ergonomic risk.
- The employee must obtain and install (at their own expense) the necessary ergonomic accessories identified in the ergonomic assessment to assure the telecommuting work area provides controls against ergonomic risks.
- The employee must immediately notify the JGI ergonomist or Safety Coordinator of any changes that are made to the equipment or configuration of the offsite workstation.

Work at Offsite Facilities

The safety of division personnel assigned to work off site at non-LBNL facilities (e.g., abroad, in private industry, at educational institutions or remote field locations, etc.) will be addressed, as appropriate through the host's ES&H protection programs by the responsible line-management chain of the host organization. When work is done at offsite facilities, employees should work with their supervisor to "Opt Out" of the LBNL JHA system. It is still the responsibility of the employee's LBNL line manager/supervisor to review the scope of work of offsite work, associated hazards, and necessary controls.

Work at UC Berkeley Campus

Work carried out on the UC Berkeley campus in spaces under the control of UC Berkeley will be carried out in accordance with the *"Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures"*, dated 3/15/2004, as amended. This document delineates responsibility and oversight of safety requirements for work carried out at LBNL and campus spaces. It establishes a clear expectation that Berkeley Lab managers are expected to take the initiative in following locally applicable ES&H rules, and specifies that work carried out at LBNL, including Donner Laboratory, is carried out in accordance with LBNL rules, and that work carried out at UCB is governed by UCB rules. In addition the Genomics Division has a Computational Genomics Group located at the Life Sciences Annex at University of California at Berkeley (UCB). As pointed out above, the ES&H rules for this group are the locally applicable UCB Campus rules.

Working Alone

In 2011, LBNL implemented a new Work Alone Policy described in the PUB-3000, Section 5.4. This policy prohibits employees from working alone when the mitigated hazards associated with their work could incapacitate them to such a degree that they cannot "self-rescue" themselves or activate emergency services. During January 2011 through March 2011, the JGI Safety Coordinator worked with Management and the JGI Area Safety Leaders to identify the potential "work alone" tasks at the JGI.

The list of potential work alone tasks was then evaluated by the appropriate LBNL EH&S Subject Matter Experts (SMEs) to determine if the Work Alone Policy applied. The LBNL EH&S SMEs determined that this policy does not apply to the general laboratory activities at the JGI and only applies to a few facilities and maintenance related activities such as using shop power tools and working on ladders above 6 feet in height.

Work Requiring Specific Approval

Other potentially hazardous work, regulated work, or work with unique materials or hazards may require additional EHS authorization documentation. Authorization documents include the biological authorizations (BUA, BUR, and BUN) required for biological work, the Activity Hazard Documents (AHD) required for laser and other high hazard work, Electrical Work Permits, LOTO Permits, Penetration Permits and Fire Permits. Requirements for this documentation outlined in the PUB-3000. Questions about which work requires additional documentation should be directed to the Safety Coordinator or the EH&S Division Liaison.

Each JGI Principal Investigator (PI) will prepare ES&H documentation and obtain required approvals for potentially hazardous or regulated work as specified in Chapter 6 of LBNL/PUB-3000 prior to commencement of the work. The following work presently carried out in this division requires such documentation:

Authorization	Type	Location	PI or Supervisor
Biological Use Registrations (BURs), Notifications (BUNs) and Authorizations (BUAs)	All Biological work that does not require a BUA is registered with the Institutional Bio-safety Committee	Buildings 100 and 400	
USDA Soil Permits	Certain imported and domestic soils	Buildings 100 &400	J.F Cheng R. Malmstrom
Autoclave Standard Operating Procedures (SOP)	SOP assures compliance with NIH Guidelines	Rooms 142, 143, 418	Fernandez, John
Certified Unified Program Agency (CUPA) Annual Business Authorization Permit Hazardous Materials Business/Mgt. Plan Business Authorization Permit Hazardous Waste Generator (CCR Title 22, section 66262 requirements)	Hazardous Materials Business Plan, Hazardous Waste Generation, Waste from SAAs and WAAs,	Buildings 100, 400	Franaszek, Stephen
Spill Prevention Control and Countermeasure Plan (SPCC), May 2003, revision 1.0	4,000 above-ground gallon diesel tank for building emergency generator in outdoor fenced area	Between Buildings1 00 and 500.	Franaszek, Stephen
Central Contra Costa County Class III Industrial User Permit and Slug Discharge Prevention & Contingency Plan	Discharges to the sanitary sewer.	100, 400	Franaszek, Stephen
Bay Area Air Quality Management District (BAAQMD) Permit to Operate, Plant #14549,	Operation and maintenance of two JGI emergency diesel generators	Fenced area between 100 and 500	Franaszek, Stephen
Activity Hazard Document (AHD) 3412, 3413 DNA Sequencing Units	JGI rooms with Class I laser products, in gene sequencers,	100 400	Roberts, Simon
Energized Electrical Work Permits Filled in Greg Stanley's office	Reviewed all A1 and A2 Energized Electrical Work Permits	100, 310 400, 500	Stanley, Greg

Active Lock/Tag Log	Reviewed written safety plans procedures for Lockout/Tagout and logs for subcontractors.	100,310 400, 500	Stanley, Greg
Surface Penetration Permits	Reviewed all Surface Penetration Permits	100, 310 400, 500	Stanley, Greg
Fire Safety Permits	Reviewed permits	100, 310 400, 500	Stanley, Greg

Supervisor Qualification and Training

Supervisor training is uniformly handled by the assignment of supervisors to one of the two supervisory JGI JHA Work Groups – Administrative Supervisor or Laboratory Supervisor. In addition, questions on the LBNL JHA inquire if an employee supervises or acts as a Work Lead for employees, and appropriate LBNL supervisory training is assigned as part of the Supervisor/Work Lead's training profile.

JGI Safety Training Program

The LBNL JHA system requires specific LBNL EH&S training courses to be completed upon assessing each employee's work tasks.

JGI-specific training courses are required in addition to the required LBNL EH&S training for employees to work at its off-site Walnut Creek facility. JGI-specific training courses have been approved by LBNL EH&S and are customized to encompass safety hazards and practices that differ from the main LBNL site but are specifically related to its off-site Walnut Creek facility.

Employees' completion of all applicable required LBNL EH&S and JGI-specific safety training courses are tracked by the LBNL JHA system. The JGI Safety Administrator maintains the JGI Safety Training Program using a JGI site-wide training completion track record and by sending frequent reminder email messages to ensure employees do not allow their required trainings to expire.

The courses offered internally by the JGI internal Safety Team include:

- PGF0010 – Intro to EHS at the JGI (Supplement to EHS0010: Intro to EHS at LBNL)
- EHS0604 – Hazardous Waste Generators at the JGI
- EHS0610 – Waste Accumulation Area Management at the JGI
- PGF0731 – JGI Autoclave Waste Policy at the JGI
- EHS0056 – Ergo Material Handling and Body Mechanics in Labs
- PGF0057 – Laboratory Ergonomics at the JGI
- EHS0062 – Worksmart Ergonomics
- EHS0154 – Emergency Response Team Training

The JGI internal Safety Team also provides additional trainings as necessary. Examples of these additional trainings are:

- Laser Safety Awareness for Production Department's CAPs Staff
- Area Safety Leader (ASL) Training
- RSI Guard Stretch-Break Software Tutorial for PCs and Macs

- Workrave Stretch-Break Software Tutorial for UNIX/Linux

Medical Issues and Medical Surveillance

Medical issues are coordinated by the Safety Coordinator through the appropriate home laboratory Health Services Department (LBNL or LLNL). The need for medical surveillance is determined by the home Health Services Department of the JGI employee. A LBNL Health Services Registered Nurse periodically visits the JGI site to participate in Case Review meetings as needed, as well as to meet with employees who have medical issues or injuries. The Safety Coordinator will ensure that employee exposure monitoring results are forwarded to the appropriate Health Services Department.

Ergonomic Program

JGI meets or exceeds all of the Ergo Program requirements detailed in PUB 3000 Chapter 17 JGI Ergonomic Program has a multi-pronged approach to ensure safety issues are addressed as proactively as possible.

JGI Ergonomics Program emphasizes providing ergonomic training, evaluations and education early on for all employees. This helps create a culture where ergonomics is woven into the how we accomplish our work safely. Key elements of the JGI Ergonomics Program include: individual ergonomic evaluations, evaluation of new or changing lab processes/ tasks, early intervention, rapid response for needed ergonomic items/ accessories, training/education, and injury management.

Feedback and Improvement Mechanisms

The JGI uses the following mechanisms to ensure the ISM function of feedback and improvement:

Quarterly Line Management Safety Walkthroughs

JGI Line Managers conduct quarterly employee ISM check, safety walkthrough inspections of work areas of their employees, check compliance status, and promote safety awareness. Line Managers should be performing walkthrough for at least ¼ of their direct reports every quarter. Issues and non-compliance findings from safety walkthroughs must be recorded and tracked via the LBNL CATS database. Area Safety Leaders (ASLs) are responsible for ensuring that issues and corrective actions are entered into CATS. Line management is responsible for ensuring that CATS issues involving their area(s) are completed in a timely manner. All walkthrough results are documented in the "Walkthrough Website" which can be accessed through the JGI EHS webpage https://sites.google.com/a/lbl.gov/jgi-line-management-safety-walkthrough/home

Periodic Executive/Senior Management Walkthroughs

JGI Director and Deputy Directors Conduct periodic safety walkthrough inspections of work areas to assess ISM, check compliance, and promote a safe workplace. Safety Coordinator assists with the scheduling and documentation of these walkthroughs. These walkthroughs are documented in the "Walkthrough Website" which can be accessed through the JGI EHS webpage https://sites.google.com/a/lbl.gov/jgi-line-management-safety-walkthrough/senior-management-executive-walkthrough

Safety Coordinator/EHS Technician Informal Walkthroughs

During the execution of their normal job duties, both the Safety Coordinator and EHS Technician routinely walk through work areas and are responsible for assessing safety compliance and spotting safety deficiencies. The EHS Technician performs monthly walkthroughs of all laboratory areas as part of the Best Management Practices inspections required by the Central Contra Costa County Sanitary District. Compliance issues and findings from walkthroughs will be entered and tracked in the CATS system.

General EH&S Performance Feedback

Performance monitoring is routinely performed by the Safety Coordinator. Safety metrics including the number of recordable injuries over the fiscal year, JHA compliance, and training compliance are recorded and reported to the senior management at the Internal Management (IMM) meeting, at Employee Safety Committee meetings, at quarterly All Hands Meetings, and through a safety performance slide which shows on the wide screen televisions located in the lobbies of all of the JGI buildings.

Individual Employee EH&S Feedback

Feedback for individual employees on their JHA and safety training compliance is provided by the Safety Coordinator. On a monthly basis the Safety Coordinator develops and emails out to all JGI employees a list of employees who have overdue or soon to be overdue safety training and JHAs. The names of employees with overdue training or overdue JHAs are also posted on the JGI EH&S website. In addition, the Safety Coordinator will email and call the responsible supervisor and employee to remind them to address the training or JHA deficiency. In the rare case that training or JHA deficiencies are not promptly addressed, a meeting will be set up between the appropriate Deputy Director, the deficient employee and their Line Manager. Through this approach, JGI has maintained both training and JHA compliance consistently at or above 99% since 2009.

Feedback for Work Groups and Line Management

Additional feedback is provided using an online dashboard named "Department Safety Reports", which is displayed on the JGI EHS web page. Department Safety Reports tracks a variety of deliverables including the status of quarterly Safety Walkthroughs, Job Hazard Assessment (JHA) compliance, training compliance, and the management of satellite accumulation areas. Department Safety Reports are routinely shared at the Internal Management Meetings (IMM), and forwarded to line managers via email at the end of each quarter. When a group is not managing their training or JHAs, the Safety Coordinator will assign a negative rating on the Department Safety Reports. In addition, the Safety Coordinator will email and call the responsible supervisor and employee to remind them to address the deficiency.

Division Self-Assessment Process

The JGI participates in LBNL's self assessment process, outlined in LBNL PUB 3105. This process involves selecting two or three internal EHS-related focus areas for thorough assessment over the duration of each Fiscal Year. Selection of the self assessment focus areas will be made by the Safety Coordinator with input from JGI Senior Managers and the JGI Safety Committee.

Feedback from ORPS Incidents and Injuries

Significant injuries, mishaps, incidents and property damage are required to be reported to the Department of Energy (DOE) using the Occurrence Reporting and Processing System (ORPS). The ORPS process is outlined at the following website http://www.lbl.gov/ehs/orps/wallchart/ . In the event there is an incident or injury that may be reportable, the appropriate LBNL EH&S Subject Matter Expert (SME) will be consulted. The Division Director will make the final decision that a given incident is a reportable occurrence through the DOE ORPS system and must approve the final ORPS report before it is submitted to the DOE ORPS database. When appropriate, an LBNL Lessons Learned that documents the incident or injury will be submitted to the LBNL Lessons Learned database.

Feedback from Non-ORPS Incidents and Injuries

Whenever there is an incident or work related injury, the EH&S Division Incident Reporting/Analysis Subject Matter Expert makes a determination on if an incident review is necessary.

If a review is deemed necessary, a review will be performed by a trained investigator (typically the Safety Coordinator or JGI Ergonomist), the injured or affected employee(s), and the responsible supervisor. The review team discusses the incident/injury, considers the causes, and determines corrective actions that will enable safe job performance. All corrective actions from this review will be entered into the CATS system where the implementation will be tracked. When appropriate, an LBNL Lessons Learned that documents the incident or injury will be submitted to the LBNL Lessons Learned database.

Injuries that involve employees who have LLNL as the home laboratory are reviewed in an equivalent manner although the review protocol may be different than that used at LBNL. In these instances, LLNL is contacted, and will provide technical expertise for the review team and the investigation. Details can be found in the LLNL/LBNL/JGI Safety MOU agreement.

Lessons Learned Program

Lessons Learned are another method used to share feedback to prevent recurrence of incidents and injuries. The JGI Lessons Learned Program includes the following elements:

- Employees are encouraged to enter internal Lessons Learned or near misses in the Safety Blog on the JGI EHS&S website. Safety Blog entries that have merit are considered by the Safety Culture Group for internal recognition and a small reward.
- Internal Lessons Learned of and Lessons Learned related to JGI Incidents and Injuries, when appropriate, are submitted to the LBNL Lessons Learned Database
- Lessons Learned from the LBNL system are routinely discussed at Employee Safety Committee meetings.
- LBNL's Lessons Learned database is linked to employees' JHAs where relevant Lessons Learned is automatically emailed to the employees based on their job tasks. JGI employees and managers review these emails as appropriate.

Corrective Action Tracking System (CATS)

The Corrective Action Tracking System (CATS) acts as the official LBNL recording system for regulatory compliance issues, findings from formal assessments, inspections, and corrective actions from incident/injury reviews (i.e., SAAR).

The CATS database is used by all JGI Management, Supervisors, ASLs, and the Safety Coordinator. It is the responsibility of Management to ensure that the LBNL Issues Management Program is followed issues; findings and non-compliances are entered into CATS and tracked to completion. For Technical Areas (i.e., laboratories and shops), the entry and closing out of CATS issues and corrective actions has been delegated to the areas' designated ASLs.

Reporting Employee Concerns

A variety of formal communication methods have been established at LNBL which enable employees to report environmental health and safety concerns or safety suggestions. The available reporting mechanisms include:

Your Immediate Supervisor	
Your Department Head	
JGI Director – Eddy Rubin	(510) 486-5072
Deputy Director of Operations – Ray Turner	(925) 296-5804
JGI Genomics Safety Coordinator – Stephen Franaszek	(925) 296-5807
JGI Assistant Safety Coordinator – Cheryl Chu	(925) 296-5649
LBNL EHS Liaison – John Heim	(510) 486-5216
LBNL EHS Technical Representative – Bruce King	(510) 495-2768
LBNL EHS Deputy Director for Customer Service – Joe Dionne	(510) 486-7586
JGI Safety Blog	https://www.jgi-psf.org/safetyblog/
LBNL Safety Concerns Web Page	http://www.lbl.gov/ehs/refs/safety_concern.shtml
LBNL Internal Whistleblower Hotline (24-hr. voicemail)	(510) 486-6300
U.S. DOE Employee Concerns Program Hotline (24-hr)	1-800-701-9966
Ethics Line (24-hr., third party administered; confidential)	1-800-999-9057
University-wide Hotline	1-800-403-4744
California Bureau of State Audits	1-800-293-8729
EH&S Suggestion Box	http://ehswprod.lbl.gov/mis/suggestions/suggestionsForm.asp
Laboratory Ombudsman	Currently Vacant

Safety Blog

The JGI's Safety Blog, is an online site-wide forum to address minor internal EHS issues, non-regulatory compliance concerns, and employees' suggestions for improvement in addition to allowing for a means to report internal Lessons Learned or Near Hits. All JGI employees can enter questions, concerns or issues into this blog. The Safety Coordinator along with the Assistant Safety Coordinator/EHS Technician is responsible for promptly addressing all Safety Blog entries.

Balanced Resources - Funding and Resources

The JGI Director, JGI Deputy Directors and PIs incorporate ES&H in their resource allocations for all projects and proposals. This includes, but is not limited to, funding for safety equipment, permits, training, maintenance, waste disposal and facilities modifications unless covered by institutional funding sources. The LBNL EH&S Division provides additional support services.

The following distribution of resources is allocated to EH&S efforts to ensure proper implementation of the JGI ISM Plan. These resources may be adjusted as needed with concurrence of LBNL EH&S.

JGI Support	**LBNL Support**
0.2 FTE – JGI Deputy Director of Operations 1.0 FTE – JGI Division Safety Coordinator 1.0 FTE – JGI Division EHS Technician/Assistant Safety Coordinator 0.25 FTE – JGI Division Ergonomist 0.7 FTE – JGI Safety Administrative Specialist	0.1 FTE – JGI EH&S Division Liaison 0.2 FTE – EH&S Industrial Hygiene 0.2 FTE – EH&S Waste Management 0.1 FTE - EHS Occupational Nurse
0.05 FTE – JGI Safety Committee Members	
Building 84 Support 0.13 Life Sciences EH&S Coordinator	

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN (SPCC)

Joint Genome Institute
Production Sequencing Facility
Walnut Creek, California

Prepared by

Robert Fox
Lawrence Berkeley National Laboratory

REVISION 3.0
February 28, 2014

SPCC PLAN APPROVAL

REVISION 3.0 **AMENDMENT 0**

DESCRIPTION OF SPCC PLAN AMENDMENT

- Updated section 1.4, Designated Responsible Persons, by adding Jim Floyd, Director of EH&S.
- Updated section 3.2, Prediction of Spills, to identify a closer storm drain found at 15 feet from the aboveground storage tank.
- Updated section 3.3, Containment and Continuous Monitoring, by correcting secondary piping from schedule 80 PVC to fiberglass.
- Updated section 3.4, Contingency Plan, to add LBNL's Blackberry Gate contact.
- Deleted section 5.0, Facility Tank Truck Loading/Unloading since 40 CFR 112.7(h) applies only oil terminal rack loading/unloading and is not applicable to the JGI.
- Updated section 6.2, Inspections, to include an annual AST inspection.
- Updated section 9.1, Documents, to add new reference documents and delete obsolete reference documents.
- Updated section 9.2, SPCC Plan Compliance Reference Table.

MANAGEMENT APPROVAL OF SPCC PLAN REVISION/AMENDMENT

Ray Turner, Division Deputy of Operations
DOE Joint Genome Institute – Production Sequencing Facility
Date 3/10/14

Greg Stanley, Facility Manager
DOE Joint Genome Institute – Production Sequencing Facility
Date 3/11/14

Steve Franaszek, Safety Coordinator
DOE Joint Genome Institute – Production Sequencing Facility
Date 3/10/14

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I have visited and examined the facility, and being familiar with the provisions of 40 CFR 112, attest that this SPCC Plan has been prepared or modified in accordance with good engineering practices, including consideration of applicable industry standards and the requirements for 40 CFR 112, and that procedures for required inspections and testing have been established; and that the Plan is adequate for the facility.

REGISTERED PROFESSIONAL ENGINEER
TIM W.J. BAUTERS
No. 74188
Exp. 6 30 2015
CIVIL
STATE OF CALIFORNIA

Signed & Stamped by Tim W.J. BAUTERS on:
February 28, 2014

Tim Bauters, PhD., PE
California Registered Civil Engineer #C74188

Date

1.0 Introduction

1.1 Purpose

The purpose of this Spill Prevention, Control, and Countermeasure (SPCC) Plan is to provide standards for the storage and usage of oil at the Joint Genome Institute – Production Sequencing Facility (JGI) that will prevent the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. This SPCC Plan (Plan) has been prepared in accordance with the requirements set forth in Title 40, Part 112 of the Code of Federal Regulations (40 CFR 112); the California Health and Safety Code Chapter 6.67 (H&SC 6.67); and the United States Department of Energy (DOE) Order No. 5400.1. In order to prepare this Plan, the Lawrence Berkeley National Laboratory (Berkeley Laboratory) has analyzed the JGI facility's capability to prevent oil discharges and facilitate safety awareness. By accumulating the information necessary for the Plan, the Berkeley Laboratory promotes the use of appropriate design and operational standards that reduce the likelihood of an oil discharge at the JGI facility. Location maps are found in Appendix B.

1.2 Applicability

Facilities are required to prepare SPCC Plans if they store any form of oil or petroleum product in excess of the minimum quantities defined below, and are located such that the facility could reasonably be expected to discharge harmful quantities of oil into navigable waters. Non- transportation facilities are required to prepare SPCC Plans if they meet the following criteria:

- An aggregate aboveground storage capacity of more than 1,320 gallons, or
- A total underground storage capacity of 42,000 gallons; and
- Could reasonably be expected to discharge oil in harmful quantities into navigable waters of the United States.

The Joint Genome Institute currently has:

- An aboveground diesel storage tank that has a storage capacity of 4000 gallons.
- A storm drain, located 50 yards from the aboveground storage tank, discharges through the storm drain system into a creek named, "Walnut Creek". Walnut Creek flows into Suisun Bay - both are navigable waters of the United States.

The Joint Genome Institute is therefore subject to the requirement to prepare a SPCC Plan.

For the purposes of this Plan:

- Oil is defined in 40 CFR 112.2(a) as "oil (or petroleum products) of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil."

- Harmful quantities of oil or petroleum products are defined in 40 CFR 110 as those that "(a) violate applicable water quality standards, or (b) cause a film or sheen upon or discoloration of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines."

- A bulk oil or petroleum storage unit is defined as a storage tank or drum having a capacity of 55 gallons or greater. This Plan addresses bulk storage of oil or petroleum products only.

1.3 Plan Maintenance and Amendments

The Environment Services Group (ESG) of the Berkeley Laboratory is responsible for maintaining and updating this SPCC Plan. A complete copy of this Plan is maintained at all times at the JGI Facility Maintenance Manager's office, at the ESG office of the Berkeley Laboratory and at the DOE Oakland Operations Office. This Plan is available to representatives of regulatory agencies for on-site review during normal business hours.

The US Environmental Protection Agency may require amendment to the Plan following spills of harmful quantities of oil to navigable waters. The SPCC Plan will be amended within six months following any change in facility design, construction, operation, or maintenance, which significantly affects the potential for discharges of oil into navigable waters. In addition, the Berkeley Laboratory will review and evaluate the SPCC Plan every five years. Within six months following completion of the review, the Berkeley Laboratory, if necessary, will revise the Plan to include any identified improvements in prevention and control technology. A Professional Engineer registered in the State of California will certify all amendments to the SPCC Plan. Changes in emergency contact names and telephone numbers will be made as they occur and will not require engineering certification. This exception allows for maintaining an emergency contact list and does not affect the technical/engineering aspects of this Plan.

1.4 Designated Responsible Persons

The following individuals are those designated responsible for oil spill prevention at Joint Genome Institute:

Greg Stanley
JGI Facility Maintenance Manager

Ron Pauer
Group Leader, Environmental Services Group, Lawrence Berkeley National Laboratory

James Floyd
Director, Environment, Health and Safety Division, Lawrence Berkeley National Laboratory

2.0 General Facility Information

Facility Name and Address:		Joint Genome Institute 2800 Mitchell Drive Walnut Creek, CA 94598
Type of Facility:		Research Laboratory [SIC 8733]
Owner Name and Address:		Castle Rock LP. 1855 Olympic Blvd. Suite 250 Walnut Creek, CA 94569
Operator Name and Address:	(1)	University of California Lawrence Berkeley National Laboratory 1 Cyclotron Road Berkeley, California 94720
	(2)	U.S. Department of Energy Oakland Operations Office 1301 Clay Street Oakland, California 94612
Facility Start-up Date:		1998
Location Maps:		Appendix A

3.0 Analysis of Spill Potential

3.1 Spill History

The 4,000 gallon aboveground diesel tank was installed at the Joint Genome Institute in December 1999. Since that time there have been no known oil or petroleum product spills.

Spills at this site are under the jurisdiction of Contra Costa County, a Certified Unified Program Agency (CUPA). The Regional Water Quality Control Boards and State Water Resources Control Board have authority if groundwater or surface water is contaminated.

3.2 Prediction of Potential Spills

The potential for a spill from the 4,000 gallon aboveground storage tank, its mode of failure, the flow direction and the potential quantity of the discharge, and the secondary containment method and containment capacity are shown in Table 1.

Location or Container	Type of Failure	Potential Discharge Volume (gallons)	Direction of Flow for Uncontained Discharge	Secondary Containment Method	Secondary Containment Capacity (gallons)
Bulk Storage Container					
4,000 AST Tank	Overfill	<1 – 3,973	north to Stormdrain	Catch Pan	5
4,000 AST Tank	Fitting leak	<1 – 4,000	north to Stormdrain	Double wall piping	Limited to the interstitial space between the pipes (< 10)
4,000 AST Tank	Seam failure internal tank	<1 – 55	north to Stormdrain	Secondary shell	4,000
4,000 AST Tank	Catastrophic failure, breach of the secondary containment shell	<1 – 4,000	north to Stormdrain	none	none

The closest storm drain is approximately 15 feet north on a down slope from the 4,000 gallon aboveground storage tank towards the Contra Costa Canal. This storm drain flows into the City of Walnut Creek's storm drain system, which empties into a creek named, "Walnut Creek". The flow from Walnut Creek eventually empties into Suisun Bay.

3.3 Containment and Continuous Monitoring

The 4000 gallon aboveground tank is a double walled tank manufactured by ConVault. The primary tank is constructed of steel. The secondary containment consists of a 30 mil thick polyethylene membrane that encloses the primary steel tank and insulation material. The primary steel tank and the secondary containment are encased in six inches of monolithic reinforced concrete. A TraceTek leak detector, manufactured by Raychem, continually monitors the interstitial space of the tank.

Because liquid volumes change with temperature, the tank should not be filled above a level that will result in overflow after thermal expansion (approximately 1 percent volume change per 15 to 25 degrees Fahrenheit temperature change).

The supply and return piping for the aboveground tank system is of double wall construction. The primary piping is constructed of schedule 40 carbon steel and the secondary piping is constructed of fiberglass. The TraceTek leak detector also continuously monitors the interstitial space of the piping.

The TraceTek leak detector has a local audible alarm. A remote audible alarm is also sounded in Building 100 room 110. The Pneumercator fuel level gauge, located on the AST has a high and low level light and audible alarm.

The head of the fuel fill port is enclosed inside of a catch pan that is designed to capture any diesel fuel that might leak out during fuel truck loading operations. The catch pan has the capacity to hold 27 gallons of fuel. In addition, a spill kit with the capacity to absorb 61 gallons is located within the fenced area at the aboveground storage tank.

3.4 Contingency Plan

Guidance for responding to emergencies may be found in the *Joint Genome Institute Integrated Safety Managemetnt (ISM) Plan.* In all cases, the employee is advised to call **9-911** to reach the Walnut Creek Police Department / Contra Costa Consolidated Fire District.

In the event of a spill of diesel fuel from the aboveground tank, the release must be immediately reported to the Walnut Creek Police Department / Contra Costa

Consolidated Fire District **9-911**, and the Berkeley Laboratory Blackberry Gate **(510) 486-6999**. Blackberry Gate personnel will contact Berkeley Laboratory EH&S.

The following items will be reported: (1) The amount of diesel fuel spilled; (2) Whether the spill was to soil or pavement, and if the spill reached a storm drain; (3) Explain what containment measures were taken (spill kit deployed?); (4) Estimate how much diesel fuel was recovered; (5) Give the time and location of the spill.

4.0 Facility Transfer Operations

4.1 Aboveground Piping

All aboveground piping supports are designed to minimize corrosion and abrasion. Aboveground piping is monitored via continuous leak detection (TraceTek) and visually inspected. All aboveground piping and valves associated with aboveground tank will be inspected as specified in Section 6.2.

The aboveground piping is not exposed to vehicular traffic. Warning signs and barriers will be posted if future pipeline installations result in exposures of pipelines to traffic. No underground piping exists in the tank system.

4.2 Out-of-Service Piping

Aboveground piping that is not in service or is in standby service for an extended time will be capped and blank-flanged when removal is not practical. The JGI has adopted "Lock Out / Tag Out" procedures to increase safety around the facility and reduce the chance of spills.

5.0 Inspections and Records

5.1 Responsibilities

Procedures for the maintenance of the tank and piping systems are developed and implemented by the Facility Maintenance Manager. The Facility Maintenance Manager oversees leak tests, monitoring, and inspections of the aboveground tank and piping. The Facility Maintenance Manager maintains records of the results. The Facility Maintenance Manager ensures that the fire extinguisher and spill kit are fully serviceable.

5.2 Inspections

The leak detection/monitoring system for the aboveground tank and piping is inspected monthly. The aboveground storage tank, foundation, and tank supports are visually inspected by the Facility Maintenance Manager monthly for signs of cracks, corrosion, or other structural deterioration. The inspection also includes a visual review of aboveground valves, pipeline joints, catch pans, piping supports, locks, and metal surfaces. An example of Facility Maintenance Manager's inspection form is located in Appendix B. If visual inspection of aboveground equipment indicates that there may be potential problems, corrective actions will be taken including, if necessary, conducting pressure tests, and ultrasonic nondestructive testing or other appropriate testing methods.

5.3 Records

All records required by this SPCC Plan are maintained for a minimum period of three years on site. After three years, the records may be retained or archived. Tank inspection records are maintained by the Facility Maintenance Manager.

6.0 Security

6.1 Barriers to Entry

Six-foot high chain link fencing surrounds the 4000 gallon aboveground storage tank at the Joint Genome Institute. The gate is kept locked. The fuel port cap is also kept locked. The Facility Manager controls access to the aboveground storage tank and the fuel port. The fencing provides the tank and pipe system protection from vehicular traffic.

6.2 Facility Lighting

There are three floodlights located in the fenced area surrounding the aboveground storage tank. These floodlights provide appropriate lighting for the entire fenced area.

7.0 Personnel Training

7.1 Training Programs

Personnel involved with the 4,000 gallon aboveground storage tank at the Joint Genome Institute receive instructions, on the job training, and/or formal classes to ensure adequate understanding in the proper operation and maintenance of equipment and spill prevention. Training may include:

- Discussion regarding applicable pollution control laws, rules, and regulations;
- Introduction of new technology or revised procedures; and
- Familiarization with the SPCC Plan, emphasizing the SPCC Plan as a resource for informing current and new employees to enhance response and pollution awareness.

Training associated with the Plan is considered job-related or required training. Whenever such training occurs, the facility manager(s) and/or the directorate's delegated personnel will record attendance of participants.

7.2 Spill Prevention Briefings

The Environmental Protection (EP) Group representative from the Lawrence Berkeley National Laboratory will conduct annual spill prevention briefings, training sessions, meetings or issue reports/memos to assure adequate understanding of this SPCC Plan. These activities will:

- Highlight and describe known spill events or failures;
- Provide a brief overview of applicable regulations, provide an update on changes or updates to the SPCC Plan or regulations;
- Provide a review of SPCC procedures, and recently developed precautionary measures; and
- Provide an opportunity for comments and discussion.

These activities may also be included as part of the personnel training. The target audience will include both EH&S personnel and Facility personnel responsible for implementation of the SPCC Plan or procedures, and other personnel that may be affected by the requirements in this SPCC Plan.

As much as possible, SPCC awareness will be incorporated into other required EH&S training courses. Periodically, the EP Group will schedule/conduct refresher/training classes for SPCC awareness. The official SPCC training course is EH&S # 680.

8.0 References

8.1 Documents

Joint Genome Institute – Production Sequencing Facility Emergency Procedures

- *Joint Genome Institute Integrated Safety Management (ISM) Plan*

Lawrence Berkeley National Laboratory Emergency Procedures

- *Emergency Management, Chapter 9,* Environment, Health & Safety Manual, Publication 3000, latest Revision; Web access: *http://www.lbl.gov/ehs/pub3000/pub3000c.html*

Regulatory

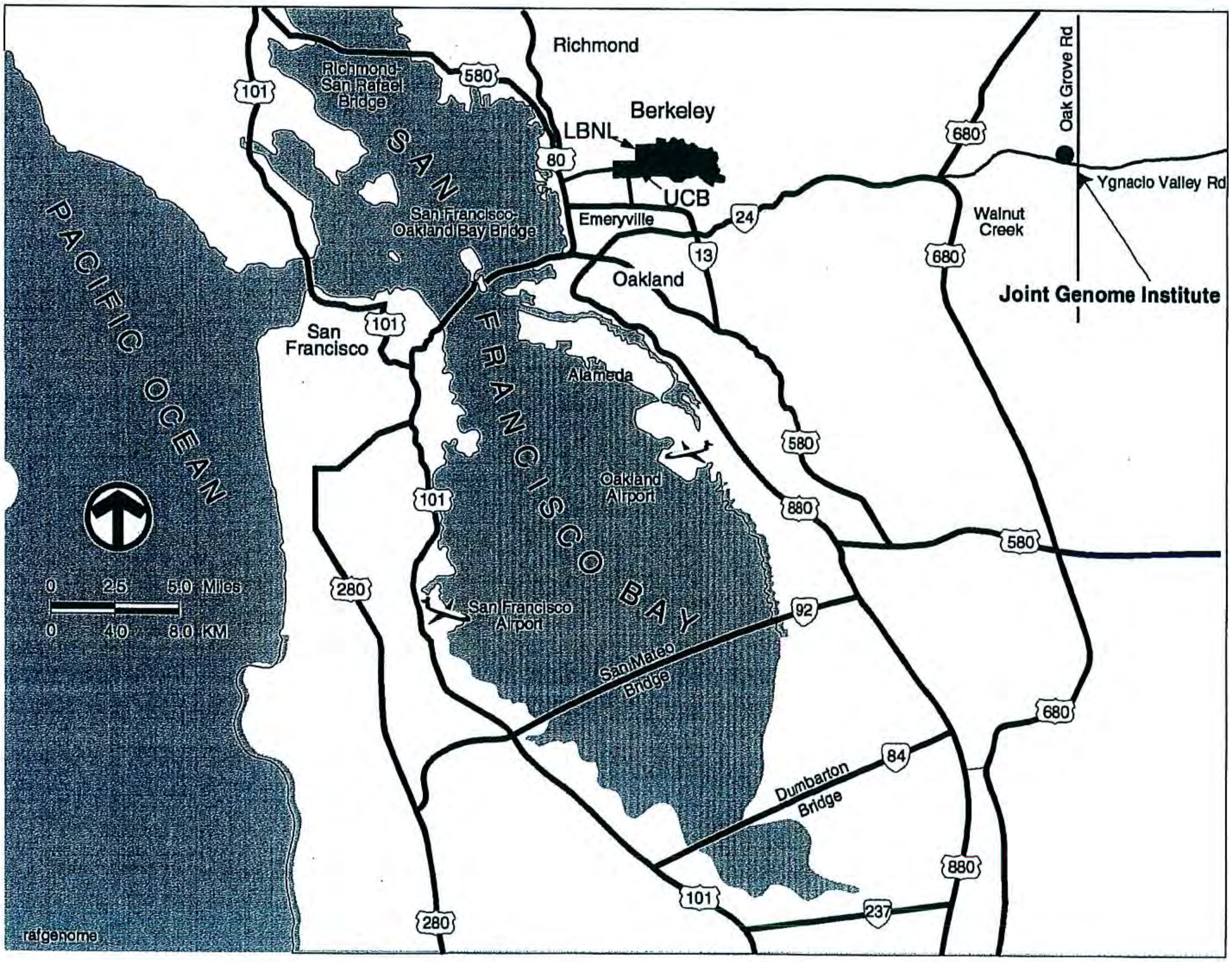
- California *Aboveground Petroleum Storage Act,* Division 20, *section 25270.*
- *Code of Federal Regulations, Part 109 and Part 112*
- *California Health and Safety Code*; *Chapter 6.67 (H&SC 6.67)*

8.2 SPCC Plan Compliance Reference Table

Reg. 40 CFR 112	Requirement	SPCC Plan Section
112.3 (d)	P.E. certification	After Title Page
112.3 (e)	Plan Maintenance	1.3
112.4 (a)	Agency review and amendment	1.3
112.5	Amendments by owner/operator	1.3
112.7	Management approval	After title page
112.7 (a)	Spill history	3.1
112.7 (b)	Prediction of spills	3.2
112.7 (c)	Containment and diversionary structures	3.3
112.7 (d)	Oil spill contingency plan	3.4
112.8 (b)	Facility drainage	3.2
112.8 (c)	Bulk storage	3.3
112.8 (c) (1)	Materials of construction	3.3
112.8 (c) (2)	Secondary containment on storage unit	3.3
112.8 (c) (3)	Rainwater drainage	Not applicable
112.8 (c) (4)	Underground tanks	Not applicable
112.8 (c) (5)	Partially buried tanks	Not applicable
112.8 (c) (6)	Aboveground tank inspections	5.2
112.8 (c) (7)	Internal heating coils	Not applicable
112.8 (c) (8)	Overfill protection	3.3
112.8 (c) (9)	Plant effluents	Not applicable
112.8 (c) (10)	Visible oil leaks	5.2
112.8 (c) (11)	Portable storage tanks	Not applicable
112.8 (d)	Transfer operations	4.0
112.8 (d) (1)	Underground piping	Not applicable
112.8 (d) (2)	Out-of-service piping	4.2
112.8 (d) (3)	Piping supports	4.1
112.8 (d) (4)	Piping inspections	6.2
112.8 (d) (5)	Traffic warnings	7.1
112.7 (h)	Facility tank car loading/unloading	Not applicable
112.9	Onshore oil production	Not applicable
112.10	Onshore oil drilling	Not applicable
112.11	Offshore oil production/drilling	Not applicable
112.8 (c) (6)	Inspection and records	6.0
112.7 (g)	Security	7.0
112.7 (f) (1)	Personnel Training	8.0

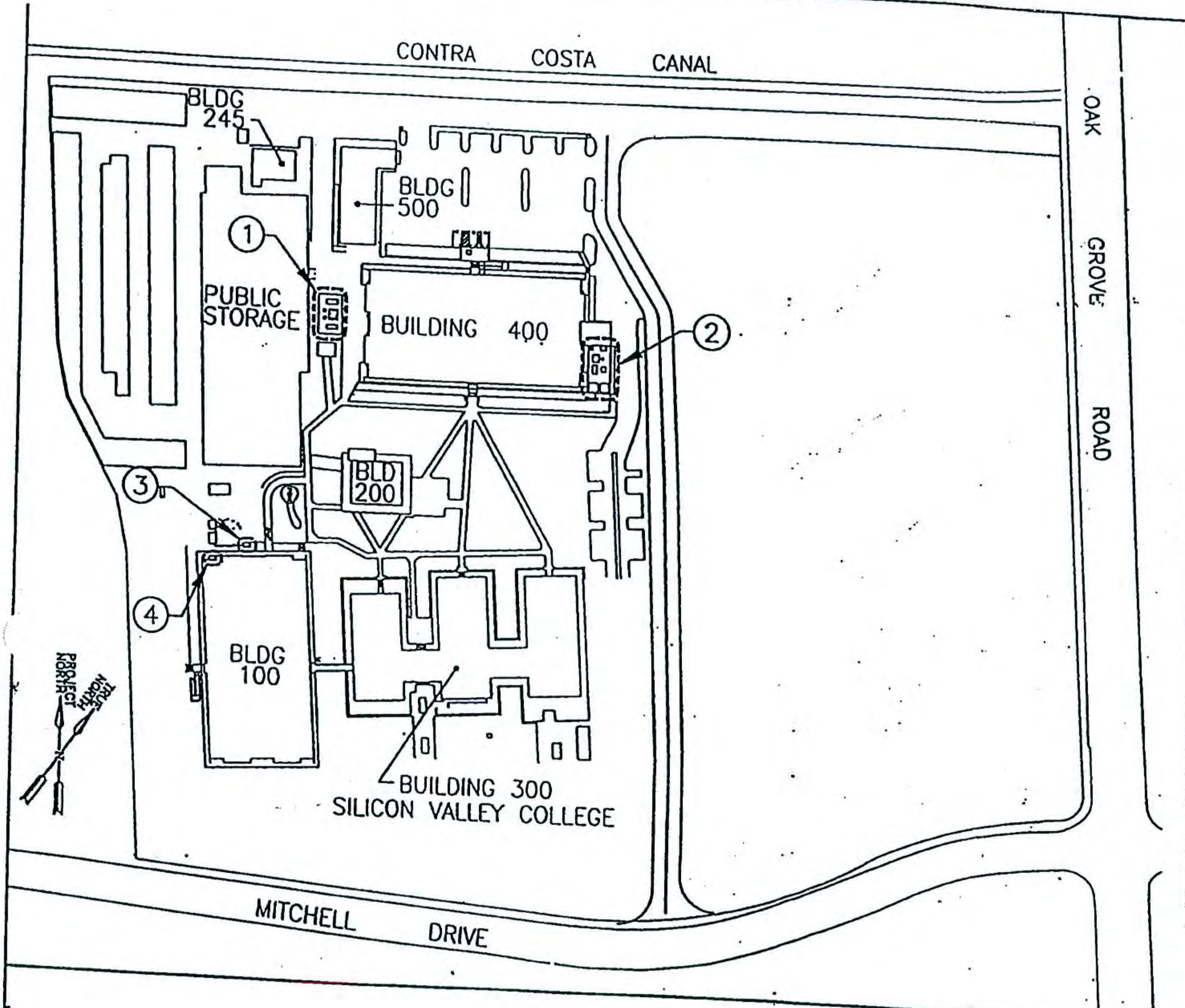
Appendix A

Location Maps



Map 2.0 San Francisco Bay Area

SITE MAP



LEGEND

① 4,000 gallon aboveground storage tank containing diesel fuel

MAP 2.1 2800 Mitchell Drive, Walnut Creek, CA

Appendix B

Tank Inspection Form

ABOVE GROUND DIESEL STORAGE TANK
MONTHLY INSPECTION FORM

Location: JGI-400 | **TANK No.:** TK-001- JGI

Tank Manufacturer: ConVault | **Serial No:** M851307

Model No.: RN4000 3SF | **Date Installed:** Dec-99

COMPONENT	INSPECT FOR	Y	N	REMARKS
Foundation / Structural Support	Corrosion			
	Cracks			
	Distortion			
Tank Walls & Casing	Corrosion			
	Cracks			
	Leaks			
	Openings Sealed			
Pipelines, Plumbing, & Valves	Corrosion			
	Cracks			
	Leaks			
Containment Area	Accumulated Liquids			
	Debris/Fire Hazard			
	Cracks			
	Damage			
	Egress Clear			
	Gate Operable			
	Drain Valve Closed			
Leak Detection System	Damage			
	Power			
	Certification			

Is re-certification of Leak Detections System required? Yes ☐ No ☐

WRC Numbers: ____________

If Yes, provide date for recertification: ____________

Comments: ____________

Signature: ____________ Date: ____________

Print Name: ____________

Annual Inspection Checklist

Facility Name:	Joint Genome Institute	Inspection Date:	
Address:	2800 Mitchell Drive, Walnut Creek, CA 94598	Prior Inspection Date:	
Inspector Name:		Retain Until Date (36 months from inspection date):	
Tanks Inspected (ID #'s):	TK-001-JGI		

Inspection Guidance:

- The periodic AST Inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a Certified Inspector. It shall be performed by an owner's inspector who is familiar with the site and can identify changes and developing problems.
- Remove promptly upon discovery standing water or liquid in the primary tank, secondary containment area, interstice, or spill container. Before discharge to the environment, inspect the liquid for regulated products or other contaminants and disposed of it properly.
- In order to comply with EPA SPCC (Spill Prevention, Control and Countermeasure) rules, a facility must regularly test liquid level sensing devices to ensure proper operation (40 CFR 112.8(c)(8)(v)).
- (*) designates an item in a non-conformance status. This indicates that action is required to address a problem.
- Non-conforming items <u>important to tank or containment integrity</u> require evaluation by an engineer experienced in AST design, a Certified Inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.
- Retain the completed checklists for 36 months.
- Complete this checklist on an annual basis supplemental to the owner monthly-performed inspection checklists.
- **Note: If a change has occurred to the tank system or containment that may affect the SPCC plan, the condition should be evaluated against the current plan requirement by a Professional Engineer knowledgeable in SPCC development and implementation.**

Item	Task	Status	Comments
1.0 Tank Containment			
1.1 Containment structure	Check for: • Holes or cracks in containment wall or floor • Washout • Liner degradation • Corrosion • Leakage • Paint failure • Tank settling	☐Yes* ☐No ☐N/A	
2.0 Tank Foundation and Supports			
2.1 Foundation	Settlement or foundation washout?	☐Yes* ☐No	
2.2 Concrete pad or ring wall	Cracking or spalling?	☐Yes* ☐No ☐N/A	
2.3 Supports	Check for corrosion, paint failure, etc.	☐Yes* ☐No ☐N/A	
2.4 Water drainage	Water drains away from tank?	☐Yes ☐No* ☐N/A	
2.5 Tank grounding	Strap secured and in good condition?	☐Yes ☐No* ☐N/A	

Annual Inspection Checklist

Item	Task	Status	Comments
3.0 Cathodic Protection			
3.1 Galvanic cathodic protection system	Confirm system is functional, includes the wire connections for galvanic systems	☐Yes ☐No* ☒N/A	
3.2 Impressed current system	a. Inspect the operational components (power switch, meters, and alarms).	☐Yes ☐No* ☒N/A	
	b. Record hour meter, ammeter and voltmeter readings.	☐Yes ☐No* ☒N/A	
4.0 Tank Shell, Heads, Roof			
4.1 Coating	Check for coating failure	☐Yes* ☐No	Check for cracks in concrete.
4.2 Steel condition	Check for: • Dents • Buckling • Bulging • Corrosion • Cracking	☐Yes* ☐No ☒N/A	Tank shell is encased in concrete and not visible.
4.3 Roof slope	Check for low points and standing water	☐Yes* ☐No ☒N/A	
5.0 Tank Equipment			
5.1 Vents	Verify that components are moving freely and vent passageways are not obstructed for: • Emergency vent covers • Pressure/vacuum vent poppets • Other moving vent components	☐Yes* ☐No	
5.2 Valves	Check the condition of all valves for leaks, corrosion and damage.	☐Yes* ☐No	- Ball valve on fill port. - Ball valves in transfer/leak detection box.
5.2.1 Anti-siphon, check and gate valves	Cycle the valve open and closed and check for proper operation.	☐Yes ☐No* ☒N/A	
5.2.2 Pressure regulator valve	Check for proper operation. (Note that there may be small, 1/4 inch drain plugs in the bottom of the valve that are not visible by looking from above only)	☐Yes ☐No* ☒N/A	
5.2.3 Expansion relief valve	Check that the valve is in the proper orientation. (Note that fuel must be discharged back to the tank via a separate pipe or tubing.)	☐Yes ☐No* ☒N/A	
5.2.4 Solenoid valves	Cycle power to valve to check operation. (Electrical solenoids can be verified by listening to the plunger opening and closing. If no audible confirmation, the valve should be inspected for the presence and operation of the plunger.)	☐Yes ☐No* ☒N/A	

Annual Inspection Checklist

Item	Task	Status	Comments
5.2.5 Fire and shear valves	a. Manually cycle the valve to ensure components are moving freely and that the valve handle or lever has clearance to allow valve to close completely.	☐Yes ☐No* ☒N/A	
	b. Valves must not be wired in open position.	☐Yes ☐No* ☒N/A	
	c. Make sure fusible element is in place and correctly positioned.	☐Yes ☐No* ☒N/A	
	d. Be sure test ports are sealed with plug after testing is complete and no temporary test fixture or component remains connected to valve.	☐Yes ☐No* ☒N/A	
5.3 Interstitial leak detection equipment	Check condition of equipment, including: • Alarm light off • Continuity light off • The wire connections of electronic gauges for tightness and corrosion	☐Yes ☐No*	
5.4 Spill containment boxes on fill pipe	a. If corrosion, damage, or wear has compromised the ability of the unit to perform spill containment functions, replace the unit.	☐Yes* ☐No	
	b. Inspect the connections to the AST for tightness, as well as the bolts, nuts, washers for condition and replace if necessary.	☐Yes* ☐No	
	c. Drain valves must be operable and closed	☐Yes* ☐No	
5.5 Strainer	a. Check that the strainer is clean and in good condition.	☐Yes ☐No* ☒N/A	
	b. Access strainer basket and check cap and gasket seal as well as bolts.	☐Yes ☐No* ☒N/A	
5.6 Filter	a. Check that the filter is in good condition and is within the manufacturer's expected service life. Replace, if necessary.	☐Yes ☐No* ☒N/A	
	b. Check for leaks and decreased fuel flow	☐Yes ☐No* ☒N/A	
5.7 Flame arrestors	Follow manufacturer's instructions. Check for corrosion and blockage of air passages.	☐Yes* ☐No ☒N/A	
5.8 Leak detector for submersible pump systems	Test according to manufacturer's instructions and authority having jurisdiction (AHJ). Verify leak detectors are suited and properly installed for aboveground use.	☐Yes ☐No* ☒N/A	

Annual Inspection Checklist

Item	Task	Status	Comments
5.9 Liquid level equipment	a. Has equipment been tested to ensure proper operation?	☐Yes ☐No* ☐N/A	Waiting for manufacturer's recommendation.
	b. Does equipment operate as required?	☐Yes ☐No* ☐N/A	
5.10 Overfill equipment	a. Follow manufacturer's instructions and regulatory requirements for inspection and functionality verification.	☐Yes ☐No* ☐N/A	Waiting for manufacturer's recommendation.
	b. Confirm device is suited for above ground use by the manufacturer	☐Yes ☐No* ☒N/A	
6.0 Insulated Tanks			
6.1 Insulation	Check condition of insulation for: • Missing sections • Areas of moisture • Mold • Damage	☐Yes* ☐No ☒N/A	
6.2 Insulation cover or jacket	Check for damage that will allow water intrusion	☐Yes* ☐No ☒N/A	
7.0 Miscellaneous			
7.1 Electrical wiring and boxes	Are they in good condition?	☐Yes ☐No* ☐N/A	
7.2 Labels and tags	Ensure that all labels and tags are intact and readable.	☐Yes ☐No* ☐N/A	NFPA label, etc.

Additional Comments: _____

CONTINGENCY PLAN

FOR

WASTE ACCUMULATION AREA

Building 100 JGI Northeast side

WAA Supervisor Emergency Coordinator Certification

As a designated Emergency Coordinator for this WAA, I certify that I understand and accept the responsibilities assigned by applicable regulations and this contingency plan including, being available to respond in a short period of time to an emergency in the WAA; being thoroughly familiar with all aspects of the contingency plan, all operations and activities in the WAA, the location and characteristics of waste handled in the WAA, the location of all applicable WAA records, and the WAA layout; coordinating all spill response measures in the event of a small spill in the WAA and; and in the event of WAA contingency plan activation, being subject to 24/7/365 recall and assignment on extended hours or during nights, weekends, and holidays if necessary to provide support to the LBNL Emergency Response Organization.

Stephen Franaszek	2-1-16 Date
John Fernandez	2-2-16 Date
Ray Turner	2-2-16 Date

Contact List
Building 100 JGI Northeast side

WAA Supervisors		
Primary	**Address**	**Telephone Number**
Stephen Franaszek	Work: 310-0302	Work: (925) 296-5807
		Home: (510) 526-4446
		Cell: (925) 980-1528
Alternate	**Address**	**Telephone Number**
John Fernandez	Work: 400-415D	Work: (925) 296-5735
		Home: (707) 310-1059
		Cell: (925) 212-7407
Alternate	**Address**	**Telephone Number**
Ray Turner	Work: 310-0307	Work: (925) 296-5804
		Home: (408) 739-2637
		Cell: (408) 390-8893

Waste Services Team
Contact List:
http://www2.lbl.gov/ehs/waste/doc/whotocall/Whotocall.pdf

Maram Kassis	**Address**	**Telephone Number**
	Work: 075-123D	Work: (510) 486-6823
		Cell: (510) 333-7840

Call 9-911 in the event of an emergency

LBNL Blackberry Gate Security – (510) 486-6999

CONTINGENCY PLAN

FOR

WASTE ACCUMULATION AREA

Building 100 JGI Northeast side

Stephen Franaszek
WAA Supervisor

2-1-16
Date

Amy Tanouye
WMG Waste Services Team Generator Assistant

2-1-16
Date

Maram Kassis
WMG Waste Services Team Manager

2·2·16
Date

David Kestell
EWRP Department Head

02/05/16
Date

Hazardous Waste Unit Addressed by Contingency Plan

Waste Accumulation Area (WAA) Building 100 JGI Northeast side

Contingency Plan Purpose and Scope

This contingency plan is designed; when implemented, to minimize hazards to human health or to the environment from fires, explosions, or any unplanned release of hazardous waste, hazardous materials, and hazardous constituents to the air, soil or surface water that originate from or occur in this WAA.

To facilitate a timely response, clean up of small spills within the WAA are also addressed in this contingency plan. Use of the spill clean-up procedures in this plan does not constitute activation of the contingency plan. This contingency plan will be activated and the plan provisions carried out immediately whenever there is a fire, explosion or release that could threaten human health or the environment.

Emergency Coordinators

The assigned Emergency Coordinators for this WAA are thoroughly familiar with the types, quantities and characteristics of waste stored in this WAA. They are trained to the provisions of this contingency plan and are familiar with the layout of the WAA and location and operation of emergency response equipment there.

In the event of a contingency plan activation the assigned emergency coordinators and alternates are subject to emergency services duty that includes 24/7/365 recall. The Emergency Coordinators have the authority to commit the resources needed to carry out the provisions of this contingency plan in the event of a fire, explosion or release that could threaten human health or the environment. The names, addresses, and telephone numbers for the assigned Emergency Coordinators are shown in Table 1.

Notification and Communication in the Event of an Emergency

In case of an emergency in this WAA the protocol is for the person who first discovers the emergency to call 9-911. Locations of nearby telephones and emergency equipment for this WAA are listed in Table 3 and shown in Figure 1. The person making the emergency call will stay on the line until it is answered and provide the dispatcher with the requested information. That person will also ensure that their supervisor and/or line manager is notified.

The Joint Genome Institute (JGI) Emergency Coordinators coordinate with local emergency response personnel and authorities to familiarize them with the layout of the site, and the location and properties of hazardous materials at the site.

If the fire is determined to be too large to extinguish, the JGI Safety Coordinator will immediately dial 9-911, initiating the response of the Contra Costa County Fire Protection District and other necessary local emergency responders.

LBNL Security at the Blackberry Guard Gate are notified and will contact LBNL Environmental Health and Safety Division (EH&S) personnel as needed to initiate spill cleanup through a contracted private hazardous materials spill response and clean-up company. As necessary the LBNL Emergency Response Organization (ERO) is also activated.

Arrangements with Local Authorities and Notifications

Depending on the magnitude of an emergency involving this WAA, JGI may receive mutual aid from local, state, and/or federal agencies. Memoranda of Agreement (MOA) and contracts with off-site agencies outline the emergency support services that each provides when requested. Copies of this contingency plan have been submitted to Contra Costa County Hazardous Materials Division, the Contra Costa County Fire Protection District and John Muir Medical Center.

If their help is needed, the notifications and requests for assistance from appropriate State or local agencies with designated response roles will be performed per the JGI Emergency Coordinator and the LBNL ERO procedures and protocols.

Notification and reporting to the California Emergency Management Agency (Cal EMA) at telephone number 800-852-7550 will also be performed by the ERO. The reporting will include the following information after determining that an off-site release has occurred:

- Name and telephone number of reporter
- Name and address of facility
- Time and type of incident (e.g. release, fire, explosion etc)
- The extent of injury if any: and
- The possible hazards to human health, the environment and outside the facility.

Release Evaluation, Assessment of Hazards and Protective Measures

The types and maximum quantities of hazardous waste stored in this WAA are included in Table 2 of this contingency plan. This information is provided in the contingency plan to ensure that the primary hazards associated with the hazardous waste in the WAA can be easily and quickly determined in the event of a spill or emergency.

Table 3 of this contingency plan lists the emergency equipment located at this WAA. Included are the locations, descriptions and uses/capabilities of each of the emergency equipment items.

If a small spill occurs in the WAA, the WAA Supervisor or alternate is responsible for implementing the spill clean-up procedures included in this contingency plan. If it is determined that the spill exceeds the criteria for a small spill, they are responsible for ensuring notification of emergency personnel is made and that the form in Attachment 1 to this plan is completed. The form in Attachment 1, when completed has the information necessary to ensure that appropriate clean-up and response resources are mobilized. The WAA Supervisor and Emergency Coordinator and alternates assigned to the WAA have access to inventory and characterization information and records for the hazardous wastes stored in the WAA and which may be needed to complete the form.

In the event this contingency plan is activated, the evaluation of a release and assessment of hazards will be performed as described in the LBNL Master Emergency Program Plan and per implementing procedures. The JGI Emergency Coordinator, WAA Supervisors and Waste Services personnel will be available as support personnel and subject matter experts to assist in this effort, as needed.

Protective measures necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other hazardous wastes will be performed by the emergency responders. As needed, measures such as collecting and containing released materials, or removing or isolating waste containers may be performed by emergency response trained WMG support personnel or contracted hazardous material spill response and clean-up personnel.

Site Evacuation

A map for the area where this WAA is located is included in this contingency plan (Figure 1). The map shows the primary evacuation route from the WAA, as well as the locations of the emergency response equipment for the WAA. Every building on site, including those near the WAA, have an evacuation plan and route posted conspicuously in the building to provide direction to the building occupants for an orderly evacuation from the building in the event of an emergency.

Due to the types and limited quantities of hazardous waste at the WAA, and that the WAA is external to the main buildings, a building-wide evacuation is unlikely. However, if a general evacuation becomes necessary, the Contra Costa County Fire Protection District will respond to the emergency location and assure an orderly evacuation of personnel. Furthermore, the JGI maintains a current building emergency plan with evacuation routes posted conspicuously in Building 100, 310, 400 and 500 to provide direction to building occupants for an orderly evacuation in the event of an emergency

Recovery Phase Requirements

Immediately following termination of emergency operation that included implementation of this contingency plan, the LBNL ERO will begin recovery operations as outlined in the LBNL Master Emergency Program Plan. The appointed Recovery Manager will have responsibility for ensuring that post emergency contingency plan requirements are met. The treatment, storage and disposal of recovered hazardous wastes, contaminated environmental media and other materials will be performed per normal operating LBNL waste management protocols.

Within 15 days after an incident requiring implementation of this contingency plan, a written report will be submitted to the Contra Costa County, Certified Unified Program Agency (CUPA) by the LBNL Waste Services Team Manager. The report will include:

- Name, address, and telephone number of facility owner and operator.
- Name, address and telephone number of the owner.
- Date, time and type of the incident
- Name and quantity of the materials involved.
- The extent of injuries, if any:
- An assessment of actual or potential hazards to human health or the environment, where this is applicable and
- The estimated quantity and disposition of recovered material that resulted from the incident.

Following an unplanned release of hazardous waste that causes the implementation of this contingency plan, the Contra Costa County, CUPA will also be notified by the LBNL Waste Services Team Manager prior to resuming normal operation in the WAA and after receiving verification that

- if there are areas within the WAA affected by the release, no hazardous waste that is incompatible with the released materials is stored in the WAA and
- all emergency equipment listed in Table 3 is cleaned and fit for intended uses.

<u>Contingency Plan Revision and Control</u>

A current copy of this contingency plan will be maintained by the WAA Supervisor at the JGI facility, at the Contra Costa County Hazardous Materials Division, the Contra Costa County Fire Protection District, John Muir Medical Center, and electronically on the Waste Management Group G:\Drive.

This contingency plan will be reviewed and immediately amended if necessary, whenever,

- Applicable regulations are revised
- The plan fails in an emergency
- The WAA changes in its design, construction, operation, maintenance, or other circumstances which could adversely impact emergency response.
- The list of emergency coordinators changes or
- The list of emergency equipment changes.

This contingency plan will be reviewed by the responsible Waste Services Team Generator Assistant annually to ensure the accuracy and applicability of the information in the plan. Reviews resulting in major modifications will initiate a new review and approval cycle.

If there are no significant changes, the annual review will be documented in an e-mail to the Waste Services Team Manager. A copy of the e-mail will be maintained with the on site and electronic copies of the contingency plan.

TABLE 1
Emergency Coordinators
WAA Building 100 JGI Northeast side

Emergency Coordinators (WMG/Division Assigned)		
Primary Emergency Coordinator	**Address**	**Telephone Number**
Stephen Franaszek	Work: 310-0302	Work: (925) 296-5807
	Home: 1624 Oceanview Ave Kensington, CA 94707	Home: (510) 526-4446 Cell: (925) 980-1528
Alternate Emergency Coordinator	**Address**	**Telephone Number**
John Fernandez	Work: 400-415D	Work: (925) 296-5735
	Home: 400 McKnight Lane Vacaville, CA 95688	Home: (707) 310-1059 Cell: (925) 212-7407
Ray Turner	Work: 310-0307	Work: (925) 296-5804
	Home: 548 Utica Drive Sunnyvale, CA 94087	Home: (408) 739-2637 Cell: (408) 390-8893
Contingency Plan Implementation Emergency Coordinators (Emergency Managers)		
Primary Emergency Coordinator	**Address**	**Telephone Number**
Aaron Ward	Work: 048-0108	Work: 510-486-7032
	Home: 1228 Robyn Dr. Danville, CA 94526	Home: 510-610-7962 Cell: 510-610-7962
Alternate Emergency Coordinator	**Address**	**Telephone Number**
Tonya Petty	Work: 048-0117	Work: 510-486-4393
	Home: 2414 Gill Port Lane Walnut Creek, CA 94598	Home: 510-849-7825 Cell: 510-849-7825

TABLE 2
Hazardous Waste Specific To
WAA Building 100 JGI Northeast side

Waste	Spill Response Procedure No. and Category
aqueous waste	1. Aqueous
alcohols	2. Flammable/Combustible Liquids

Maximum Capacity: **300 gallons**

TABLE 3
LIST OF EMERGENCY EQUIPMENT FOR
WAA Building 100 JGI Northeast side

SEE FIGURE 1 FOR LAYOUT OF BLDG/WAA AND LOCATIONS OF THE FOLLOWING SPILL RESPONSE ITEMS

Shower/Eyewash - Located adjacent to the roll-up door, about 10 feet east of the WAA.

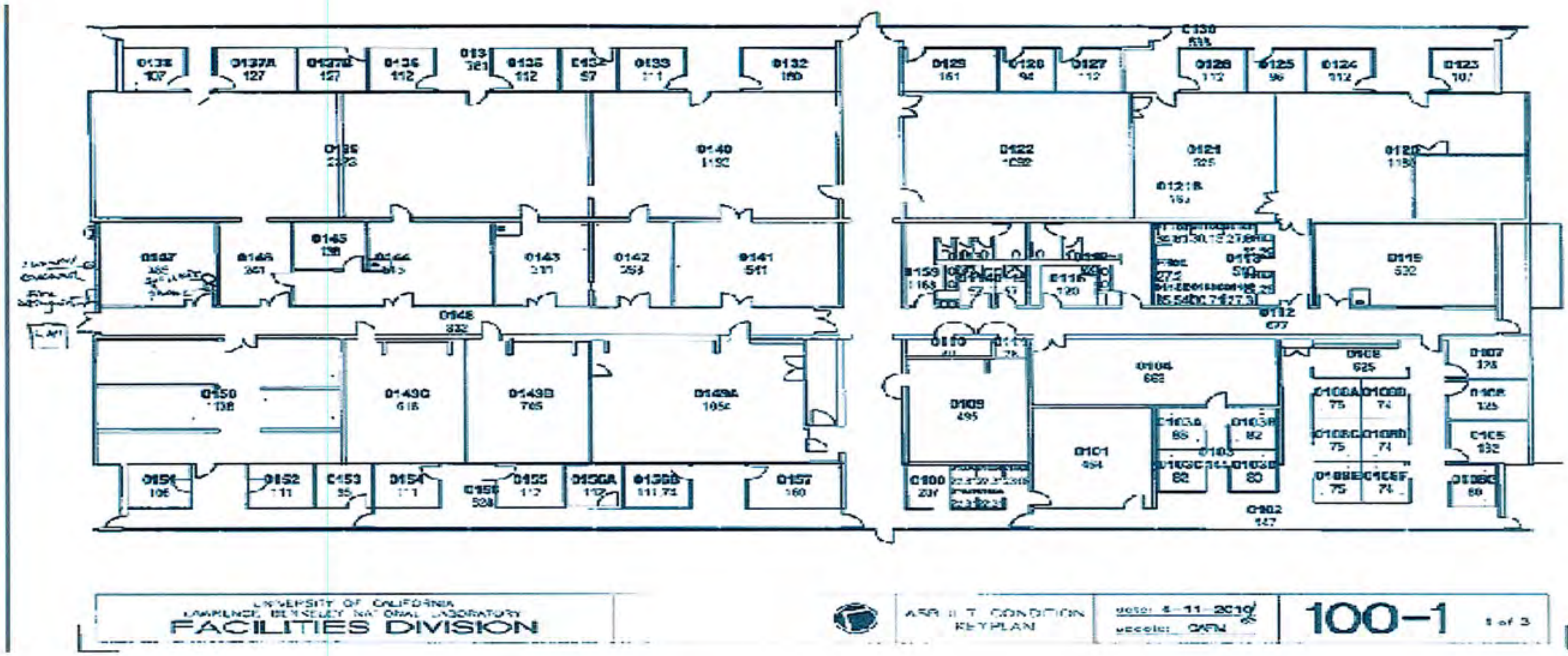
Telephone - Located inside Bldg 100 Rm 149C, to the right of the door as you enter (north end of the room).. This telephone is used for both internal and external communication.

Fire Extinguisher - Mounted on the wall adjacent to the roll-up door.

SPILL KIT - Located inside Bldg 100 Rm 147 near the roll up door (southeast end of the room). Contains the items listed below.

Quantity	Item Description	Purpose/Use
10	absorbent socks	general use/absorbent material
2	gloves, nitrile	hand protection
8	pad, absorbent	general use/absorbent material
2	Tyvek protective suit with hood and boots	protection from dust/some chemicals (not acids)
2	safety glasses	eye protection
3	caution tape	cordon off spill area
3	bags, plastic liners	contain used absorbent, PPE, and other spill clean up materials

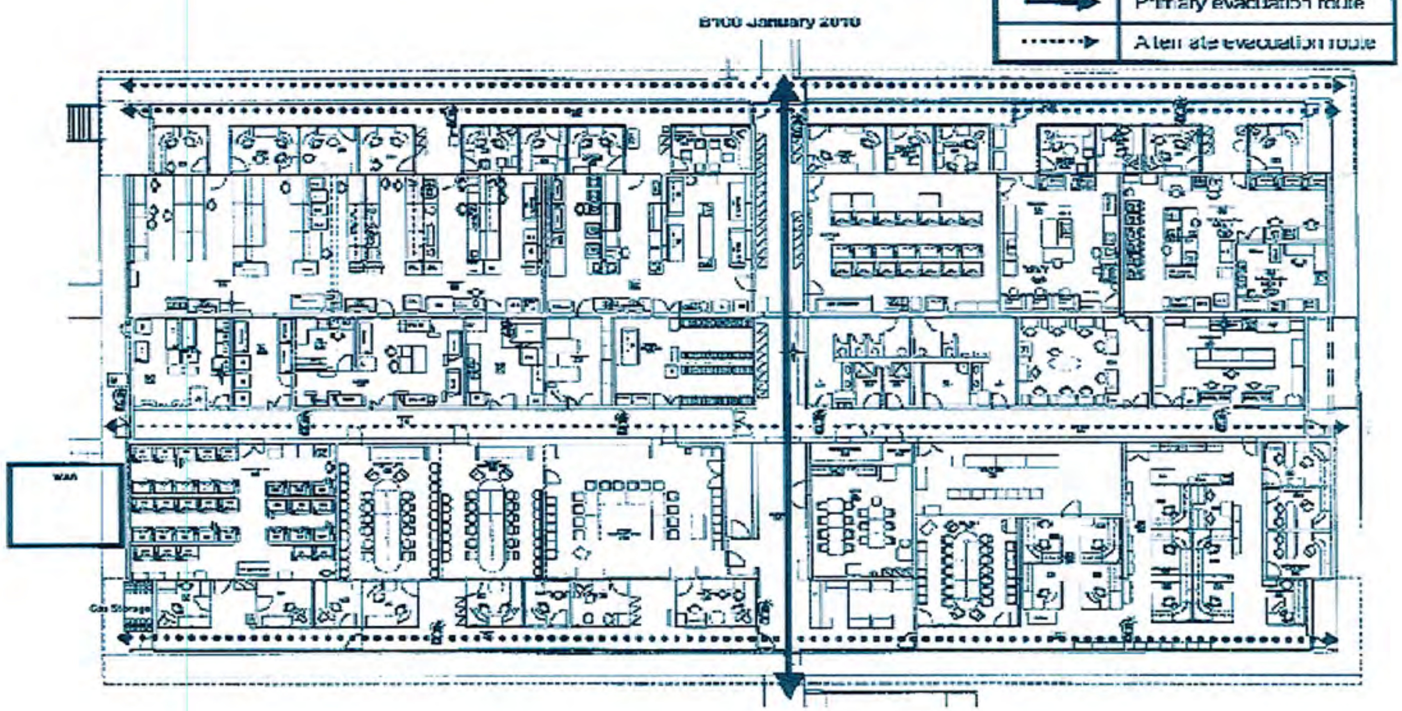
FIGURE 1
WAA Building 100 JGI Northeast side
EVACUATION AND EQUIPMENT MAPS



Evacuation Map – B-100

LEGEND

	Emergency response/ First Aid kit(s)
	Fire extinguisher
	Emergency Eyewash / Shower Unit
	Primary evacuation route
	Alternate evacuation route



SPILL-RESPONSE PROCEDURES FOR WAA

The following spill responses are for small spills only to be used by WAA personnel. If you are uncertain about your ability to safely manage a spill, call 9-911 for help immediately. All spills must be noted in the spill log book.

A large spill is defined as one in which:

- the nature of the material and the potential hazards are not known or are in question,
- the spill is perceived as an immediate actual or potential threat to public health or the environment, and
- the spilled material requires more than one or two people to clean up the spill safely within one hour.

In the event of a large spill or fire, call the Fire Department immediately at 9-911. Provide the Fire Department with the following information:

- location of the spill
- source of spill
- type of material spilled
- known hazards of spilled material
- amount of spilled material
- any accidents or injuries
- any exposure to personnel

A small spill is defined as one in which:

- the nature and hazards of the spilled material are known,
- the material does not have a perceived immediate actual or potential threat to human health or the environment, and
- the spill is small enough to be cleaned up quickly and safely by one or two people in one hour.

To clean up a small spill you must:

1. Avoid contact with the waste and stay upwind.
2. Wear appropriate PPE. If skin or eye exposure occurs call 9-911.
3. In case of contact with the skin, remove all contaminated clothing and flood the skin with water. Wash all affected areas thoroughly with soap and water.
4. In the case of contact with the eyes, hold the eyes open and flush with water for at least 15 minutes.

The following spill response procedures are specific to the type of hazardous waste stored in the WAA. The number identifying the spill response procedure corresponds to the number listed for each type of waste in Table 2 of this contingency plan.

ONLY THOSE SPILL RESPONSE PROCEDURES SPECIFIC TO THIS WAA ARE INCLUDED BELOW.

Spill Response Procedure #1 Aqueous Spills

FOR SPILLS OF LESS THAN 5 GALLON, first call your supervisor. Use an absorbent material (green colored decal) to pick up the liquid spill. Wash the spill area with soap and water. Manage your contaminated clothing and other clean-up materials as a hazardous waste.

Personal Protection

Avoid contact with the waste and stay upwind. Wear protective gloves, and other appropriate personal protective equipment to prevent contact with body. For contact with the skin or eyes, call for help. Remove all contaminated clothing and flood the skin with water. Wash all affected areas thoroughly with soap and water. For contact with eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Hazards

Vapors may be irritating.

Spill Response Procedure #2 Flammable/Combustible Liquid Spills

FOR SPILLS OF LESS THAN 1 GALLON, FIRST REMOVE ALL SOURCES OF IGNITION; then call your supervisor. Use absorbent materials (blue colored decal), rags, towels, or any other appropriate materials to absorb the liquid. Seal your contaminated clothing, used absorbents and other clean-up materials in vapor-tight containers and manage as a hazardous waste.

Personal Protection

Avoid contact with the waste and stay upwind. Wear protective gloves, and other appropriate personal protective equipment to prevent contact with body. For contact with the skin or eyes, call for help. In case of contact with the skin, remove all contaminated clothing and flood the skin with water. Wash all affected areas thoroughly with soap and water. In case of contact with eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Hazards

Vapors can cause dizziness and narcosis. Flammable liquids can be absorbed through the skin.

ATTACHMENT 1
SPILL REPORTING FORM

Contact Information

Caller name:	POC*:
Division:	Division:
Land line (include area code):	Land line(include area code):
Mobile (include area code):	Mobile (include area code):

*POC is the person who has spill details & can provide additional information. Indicate if it's the same as caller.

Location Information

Indoor Location (Complete for a spill inside a building)	**Outdoor Location** (Complete for a spill outside of a building)
Building:	Nearest Building:
Floor:	Cross Street(s):
Room:	Other Location Information (e.g. road, dirt, sewer):
Location in Room:	
Is alarm sounding? (Circle One): Yes No Don't Know	
Is building evacuated? (Circle One): Yes No Don't Know	

Chemical Information

Date of Spill: ____________ Time of Spill:______

Material Information (use reverse side for additional materials)
Chemical/product Name (spell out):
CAS #
Material Type (Circle One): Solid Liquid Gas
Amount Spilled (Circle One): Small Large
Spill Condition (Circle One): Contained Spreading
Can you smell the material? (Circle One): Yes No Don't Know
Attachment 1 continued
Type Container (Circle One):

Can Bottle Other (specify)
Condition of Container (Circle One): Undamaged Damaged Don't Know

Additional Materials (if necessary)

Material 2	Material 3
Chemical Name:	Chemical Name:
CAS #	CAS #
Material Type (Circle One): Solid Liquid Gas	Material Type (Circle One): Solid Liquid Gas
Amount Spilled (Circle One): Small Large	Amount Spilled (Circle One): Small Large
Condition (Circle One): Contained Spreading	Condition (Circle One): Contained Spreading
Can you smell the material? (Circle One): Yes No Don't Know	Can you smell the material? (Circle One): Yes No Don't Know
Type Container (Circle One): Can Bottle Other (specify)	Type Container (Circle One): Can Bottle Other (specify)
Condition of Container (Circle One): Undamaged Damaged Don't Know	Condition of Container (Circle One): Undamaged Damaged Don't Know

CONTINGENCY PLAN

FOR

WASTE ACCUMULATION AREA

Building 400 JGI North side

WAA Supervisor Emergency Coordinator Certification

As a designated Emergency Coordinator for this WAA, I certify that I understand and accept the responsibilities assigned by applicable regulations and this contingency plan including, being available to respond in a short period of time to an emergency in the WAA; being thoroughly familiar with all aspects of the contingency plan, all operations and activities in the WAA, the location and characteristics of waste handled in the WAA, the location of all applicable WAA records, and the WAA layout; coordinating all spill response measures in the event of a small spill in the WAA and; and in the event of WAA contingency plan activation, being subject to 24/7/365 recall and assignment on extended hours or during nights, weekends, and holidays if necessary to provide support to the LBNL Emergency Response Organization.

Stephen Franaszek	2-1-16 Date
John Fernandez	2-2-16 Date
Ray Turner	2-2-16 Date

Contact List
Building 400 JGI North side

WAA Supervisors		
Primary	**Address**	**Telephone Number**
Stephen Franaszek	Work: 310-0302	Work: (925) 296-5807
		Home: (510) 526-4446
		Cell: (925) 980-1528
Alternate	**Address**	**Telephone Number**
John Fernandez	Work: 400-415D	Work: (925) 296-5735
		Home: (707) 310-1059
		Cell: (925) 212-7407
Alternate	**Address**	**Telephone Number**
Ray Turner	Work: 310-0307	Work: (925) 296-5804
		Home: (408) 739-2637
		Cell: (408) 390-8893
Waste Services Team Contact List: http://www2.lbl.gov/ehs/waste/doc/whotocall/Whotocall.pdf		
Maram Kassis	**Address**	**Telephone Number**
	Work: 075-123D	Work: (510) 486-6823
		Cell: (510) 333-7840
Call 9-911 in the event of an emergency		
LBNL Blackberry Gate Security – (510) 486-6999		

CONTINGENCY PLAN

FOR

WASTE ACCUMULATION AREA

Building 400 JGI North side

2-1-16

Stephen Franaszak
WAA Supervisor

Date

2-1-16

Amy Tanouye
WMG Waste Services Team Generator Assistant

Date

2.2.16

Maram Kassis
WMG Waste Services Team Manager

Date

02/05/16

David Kestell
EWRP Department Head

Date

Hazardous Waste Unit Addressed by Contingency Plan

Waste Accumulation Area (WAA) Building 400 JGI North side

Contingency Plan Purpose and Scope

This contingency plan is designed; when implemented, to minimize hazards to human health or to the environment from fires, explosions, or any unplanned release of hazardous waste, hazardous materials, and hazardous constituents to the air, soil or surface water that originate from or occur in this WAA.

To facilitate a timely response, clean up of small spills within the WAA are also addressed in this contingency plan. Use of the spill clean-up procedures in this plan does not constitute activation of the contingency plan. This contingency plan will be activated and the plan provisions carried out immediately whenever there is a fire, explosion or release that could threaten human health or the environment.

Emergency Coordinators

The assigned Emergency Coordinators for this WAA are thoroughly familiar with the types, quantities and characteristics of waste stored in this WAA. They are trained to the provisions of this contingency plan and are familiar with the layout of the WAA and location and operation of emergency response equipment there. In the event of a small spill in the WAA, these personnel are responsible for implementing the spill clean-up procedures included in this contingency plan.

In the event of a contingency plan activation the assigned emergency coordinators and alternates are subject to emergency services duty that includes 24/7/365 recall. The Emergency Coordinators have the authority to commit the resources needed to carry out the provisions of this contingency plan in the event of a fire, explosion or release that could threaten human health or the environment. The names, addresses, and telephone numbers for the assigned Emergency Coordinators are shown in Table 1.

Notification and Communication in the Event of an Emergency

In case of an emergency in this WAA the protocol is for the person who first discovers the emergency to call 9-911. Locations of nearby telephones and emergency equipment for this WAA are listed in Table 3 and shown in Figure 1. The person making the emergency call will stay on the line until it is answered and provide the dispatcher with the requested information. That person will also ensure that their supervisor and/or line manager is notified.

The Joint Genome Institute (JGI) Emergency Coordinators coordinate with local emergency response personnel and authorities to familiarize them with the layout of the site, and the location and properties of hazardous materials at the site.

If the fire is determined to be too large to extinguish, the JGI Safety Coordinator will immediately dial 9-911, initiating the response of the Contra Costa County Fire Protection District and other necessary local emergency responders.

LBNL Security at the Blackberry Guard Gate are notified, x6999 [(510) 486-6999)] and will contact LBNL Environmental Health and Safety Division (EH&S) personnel as needed to initiate spill cleanup through a contracted private hazardous materials spill response and clean-up company. As necessary the LBNL Emergency Response Organization is also activated.

Arrangements with Local Authorities and Notifications

Depending on the magnitude of an emergency involving this WAA, JGI may receive mutual aid from local, state, and/or federal agencies. Memoranda of Agreement (MOA) and contracts with off-site agencies outline the emergency support services that each provides when requested. Copies of this contingency plan have been submitted to Contra Costa County Hazardous Materials Division, the Contra Costa County Fire Protection District and John Muir Medical Center.

If their help is needed, the notifications and requests for assistance from appropriate State or local agencies with designated response roles will be performed per the JGI Emergency Coordinator and the LBNL ERO procedures and protocols.

Notification and reporting to the California Emergency Management Agency (Cal EMA) at telephone number 800-852-7550 will also be performed by the ERO. The reporting will include the following information after determining that an off-site release has occurred:

- Name and telephone number of reporter
- Name and address of facility
- Time and type of incident (e.g. release, fire, explosion etc)
- The extent of injury if any: and
- The possible hazards to human health, the environment and outside the facility.

Release Evaluation, Assessment of Hazards and Protective Measures

The types and maximum quantities of hazardous waste stored in this WAA are included in Table 2 of this contingency plan. This information is provided in the contingency plan to ensure that the primary hazards associated with the hazardous waste in the WAA can be easily and quickly determined in the event of a spill or emergency.

Table 3 of this contingency plan lists the emergency equipment located at this WAA. Included are the locations, descriptions and uses/capabilities of each of the emergency equipment items.

If a small spill occurs in the WAA, the Emergency Coordinator or alternate is responsible for implementing the spill clean-up procedures included in this contingency plan. If it is determined that the spill exceeds the criteria for a small spill, they are responsible for ensuring notification of emergency personnel is made and that the form in Attachment 1 to this plan is completed. The form in Attachment 1, when completed has the information necessary to ensure that appropriate clean-up and response resources are mobilized. The Emergency Coordinator or alternate assigned to the WAA have access to inventory and characterization information and records for the hazardous wastes stored in the WAA and which may be needed to complete the form.

In the event this contingency plan is activated, the evaluation of a release and assessment of hazards will be performed as described in the LBNL Master Emergency Program Plan and per implementing procedures. The JGI Emergency Coordinator, WAA Supervisors and Waste Services personnel will be available as support personnel and subject matter experts to assist in this effort, as needed.

Protective measures necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other hazardous wastes will be performed by the emergency responders. As needed, measures such as collecting and containing released materials, or removing or isolating waste containers may be performed by emergency response trained WMG support personnel or contracted hazardous material spill response and clean-up personnel.

Site Evacuation

A map for the area where this WAA is located is included in this contingency plan (Figure 1). The map shows the primary evacuation route from the WAA, as well as the locations of the emergency response equipment for the WAA. Every building on site, including those near the WAA, have an evacuation plan and route posted conspicuously in the building to provide direction to the building occupants for an orderly evacuation from the building in the event of an emergency.

Due to the types and limited quantities of hazardous waste at the WAA, and that the WAA is external to the main buildings, a building-wide evacuation is unlikely. However, if a general evacuation becomes necessary, the Contra Costa County Fire Protection District will respond to the emergency location and assure an orderly evacuation of personnel. Furthermore, the JGI maintains a current building emergency plan with evacuation routes posted conspicuously in Building 100, 310, 400 and 500 to provide direction to building occupants for an orderly evacuation in the event of an emergency

Recovery Phase Requirements

Immediately following termination of emergency operation that included implementation of this contingency plan, the LBNL ERO will begin recovery operations as outlined in the LBNL Master Emergency Program Plan. The appointed Recovery Manager will have responsibility for ensuring that post emergency contingency plan requirements are met. The treatment, storage and disposal of recovered hazardous wastes, contaminated environmental media and other materials will be performed per normal operating LBNL waste management protocols.

Within 15 days after an incident requiring implementation of this contingency plan, a written report will be submitted to the Contra Costa County, Certified Unified Program Agency (CUPA) by the LBNL Waste Services Team Manager. The report will include:

- Name, address, and telephone number of facility owner and operator.
- Name, address and telephone number of the owner.
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- Name and quantity of the materials involved.
- The extent of injuries, if any:
- An assessment of actual or potential hazards to human health or the environment, where this is applicable and
- The estimated quantity and disposition of recovered material that resulted from the incident .

Following an unplanned release of hazardous waste that causes the implementation of this contingency plan, the Contra Costa County, CUPA will also be notified by the LBNL Waste Services Team Manager prior to resuming normal operation in the WAA and after receiving verification that

- if there are areas within the WAA affected by the release, no hazardous waste that is incompatible with the released materials is stored in the WAA and
- all emergency equipment listed in Table 3 is cleaned and fit for intended uses.

Contingency Plan Revision and Control

A current copy of this contingency plan will be maintained by the WAA Supervisor at the JGI facility, at the Contra Costa County Hazardous Materials Division, the Contra Costa County Fire Protection District, John Muir Medical Center, and electronically on the Waste Management Group G:\Drive.

This contingency plan will be reviewed and immediately amended if necessary, whenever,

- Applicable regulations are revised
- The plan fails in an emergency
- The WAA changes in its design, construction, operation, maintenance, or other circumstances which could adversely impact emergency response.
- The list of emergency coordinators changes or
- The list of emergency equipment changes.

This contingency plan will be reviewed by the responsible Waste Services Team Generator Assistant annually to ensure the accuracy and applicability of the information in the plan. Reviews resulting in major modifications will initiate a new review and approval cycle.

If there are no significant changes, the annual review will be documented in an e-mail to the Waste Services Team Manager. A copy of the e-mail will be maintained with the on site and electronic copies of the contingency plan.

TABLE 1
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WAA Building 400 JGI North side

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	Home: 400 McKnight Lane Vacaville, CA 95688	Home: (707) 310-1059 Cell: (925) 212-7407
Ray Turner	Work: 310-0307	Work: (925) 296-5804
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Alternate Emergency Coordinator	**Address**	**Telephone Number**
Tonya Petty	Work: 048-0117	Work: 510-486-4393
	Home: 2414 Gill Port Lane Walnut Creek, CA 94598	Home: 510-849-7825 Cell: 510-849-7825

TABLE 2
Hazardous Waste Specific To
WAA Building 400 JGI North side

Waste	Spill Response Procedure No. and Category
lab chemicals - toxic liquids	7. Toxics
lab chemicals - toxic solids	7. Toxics
lab chemicals – ignitable liquids	2. Flammable/Combustible Liquids
lab chemicals - ignitable solids	6. Flammable Solids
lab chemicals - corrosvie liquids (acid)	3. Acids
lab chemicals - corrosive liquids (bases)	4. Caustics
used oil	2. Flammable/Combustible Liquids
lab chemicals - organic peroxides	12. Organic Peroxides
lab chemicals - aerosol cans - flammable gas	9. Flammable Gases
lab chemicals - reactive liquids	10. Reactive Liquids
lab chemicals - reactive solids	11. Reactive Solids

Maximum Capacity: **600 gallons**

TABLE 3
LIST OF EMERGENCY EQUIPMENT FOR
WAA Building 400 JGI North side

SEE FIGURE 1 FOR LAYOUT OF BLDG/WAA AND LOCATIONS OF THE FOLLOWING SPILL RESPONSE ITEMS

Shower/Eyewash - Located adjacent to stairs leading down to WAA. .

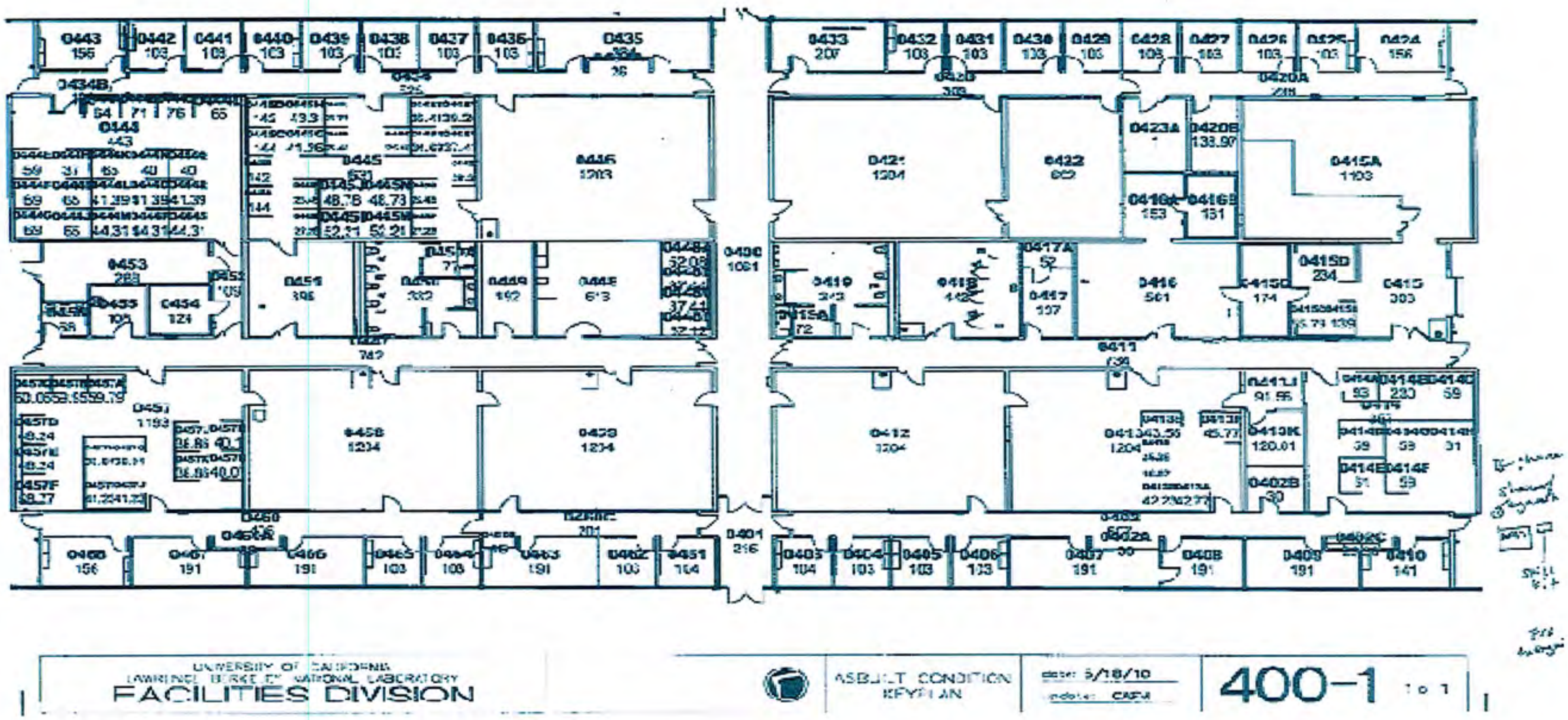
Telephone - Located on the fence between the compressor and the deionized water system about 15 feet north of the WAA. . This telephone is used for both internal and external communication.

Fire Extinguisher - Mounted on the wall adjacent to the roll-up door.

SPILL KIT - Located adjacent to the WAA, between the WAA and storage cabinet (and spill kit chemicals are stored in the storage cabinet). Contains the items listed below.

Quantity	Item Description	Purpose/Use
10	absorbent socks	general use/absorbent material
2	gloves, nitrile	hand protection
8	absorbent pad	general use/absorbent material
2	Tyvek protective suit with hood and boots	protection from dust/some chemicals (not acids)
2	glasses, safety	eye protection
3	warning tape	cordon off spill area
1	sodium bicarbonate	clean up acid spills
1	citric acid	clean up caustic spills

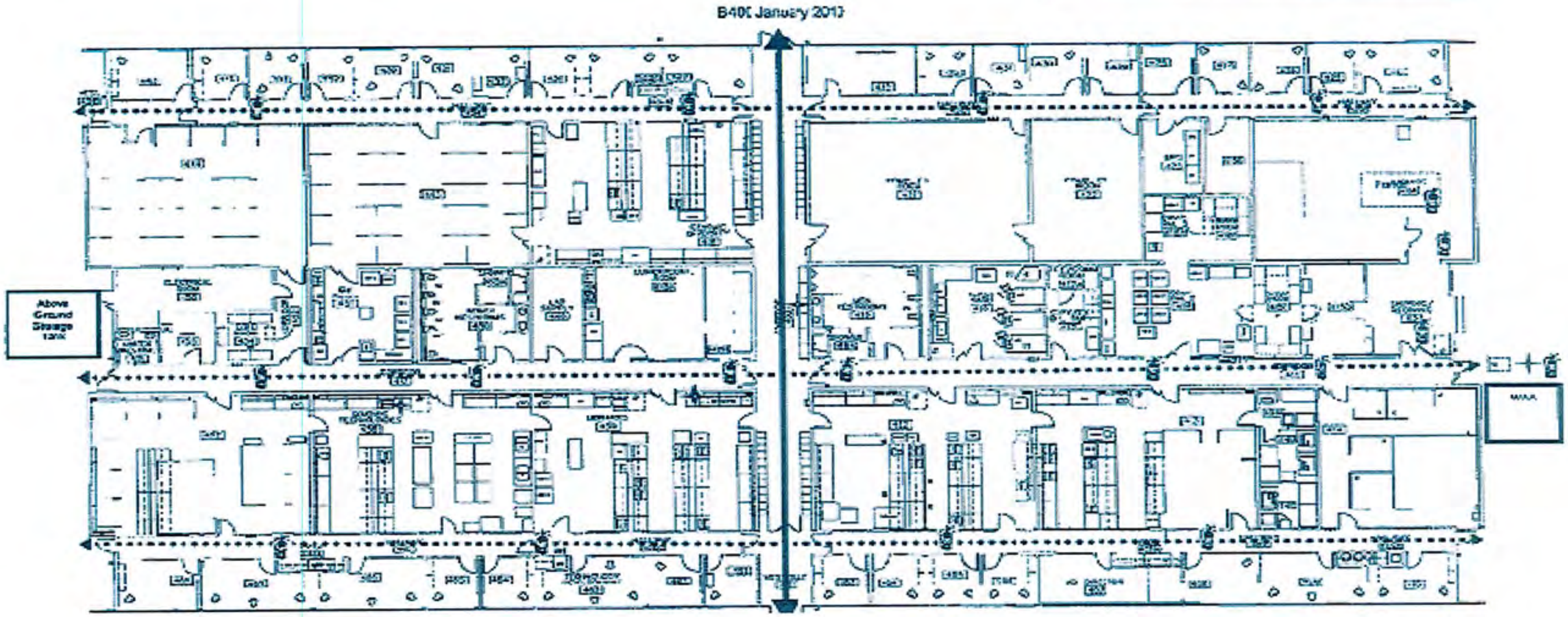
FIGURE 1
WAA Building 400 JGI North side
EVACUATION and EQUIPMENT MAPS



Evacuation Map – B-400

LEGEND

Symbol	Meaning
✚	Emergency response/ First Aid kit(s)
(fire extinguisher icon)	Fire extinguisher
(eyewash / shower icons)	Emergency Eyewash / Shower Unit
——►	Primary evacuation route
······►	Alternate evacuation route



SPILL-RESPONSE PROCEDURES FOR WAA

The following spill responses are for small spills only to be used by WAA personnel. If you are uncertain about your ability to safely manage a spill, call x9-911 for help immediately. All spills must be noted in the spill log book.

A large spill is defined as one in which:

- the nature of the material and the potential hazards are not known or are in question,
- the spill is perceived as an immediate actual or potential threat to public health or the environment, and
- the spilled material requires more than one or two people to clean up the spill safely within one hour.

In the event of a large spill or fire, call the Fire Department immediately at x9-911. Provide the Fire Department with the following information:

- location of the spill
- source of spill
- type of material spilled
- known hazards of spilled material
- amount of spilled material
- any accidents or injuries
- any exposure to personnel

A small spill is defined as one in which:

- the nature and hazards of the spilled material are known,
- the material does not have a perceived immediate actual or potential threat to human health or the environment, and
- the spill is small enough to be cleaned up quickly and safely by one or two people in one hour.

To clean up a small spill you must:

1. Avoid contact with the waste and stay upwind.
2. Wear appropriate PPE. If skin or eye exposure occurs call x9-911.
3. In case of contact with the skin, remove all contaminated clothing and flood the skin with water. Wash all affected areas thoroughly with soap and water.
4. In the case of contact with the eyes, hold the eyes open and flush with water for at least 15 minutes.

The following spill response procedures are specific to the type of hazardous waste stored in the WAA. The number identifying the spill response procedure corresponds to the number listed for each type of waste in Table 2 of this contingency plan.

ONLY THOSE SPILL RESPONSE PROCEDURES SPECIFIC TO THIS WAA ARE INCLUDED BELOW.

Spill Response Procedure #2 Flammable/Combustible Liquid Spills
FOR SPILLS OF LESS THAN 1 GALLON, FIRST REMOVE ALL SOURCES OF IGNITION; then call your supervisor. Use absorbent materials (blue colored decal), rags, towels, or any other appropriate materials to absorb the liquid. Seal your contaminated clothing, used absorbents and other clean-up materials in vapor-tight containers and manage as a hazardous waste.

Personal Protection
Avoid contact with the waste and stay upwind. Wear protective gloves, and other appropriate personal protective equipment to prevent contact with body. For contact with the skin or eyes, call for help. In case of contact with the skin, remove all contaminated clothing and flood the skin with water. Wash all affected areas thoroughly with soap and water. In case of contact with eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Hazards
Vapors can cause dizziness and narcosis. Flammable liquids can be absorbed through the skin.

Spill Response Procedure #3 Acids Spills
FOR SPILLS OF LESS THAN 5 GALLON, first call your supervisor. Use absorbent material (red colored decal) to pick up the liquid spill. Do not use towels or rags as spontaneous ignition could occur. Neutralize residual acid by sprinkling affected areas with sodium bicarbonate until the addition of fresh sodium bicarbonate produces no further foaming. For spills of hydrofluoric acid, use gypsum (calcium sulfate) only; hydrofluoric acid may react with other materials to produce silicon tetrafluoride, a corrosive gas. Wash the spill area with soap and water. Manage your contaminated personal protective equipment and other clean-up materials as a hazardous waste.

Personal Protection
Avoid contact with the waste and stay upwind. Wear gloves, and other appropriate personal protective equipment to prevent contact with the body. For contact with the skin or eyes call for help. In case of skin exposure, remove all contaminated clothing and flood the skin with water. Wash all affected skin areas thoroughly with soap and water. In case of contact with the eyes, hold the eyes open and flush with water for at least 15 minutes. As hydrofluoric acid burns may not appear immediately, Report to a medical facility as soon as possible for a medical evaluation.

Hazards
Vapors may be irritating and can cause severe burns to skin, eyes, and mucous membranes.

Spill Response Procedure #4 Caustics Spills
FOR SPILLS OF LESS THAN 5 GALLON, FIRST REMOVE ALL SOURCES OF IGNITION. Call your supervisor. Use absorbent materials (red colored decal), rags, or towels to absorb the

liquid. Seal your contaminated clothing and the all other clean-up materials in vapor-tight containers and manage as a hazardous waste.

Personal Protection

Avoid contact with the waste and stay upwind. Wear gloves, and other appropriate personal protective equipment to prevent contact with the body. For contact with the skin or eyes, call for help. In case of skin exposure, remove all contaminated clothing and flood the skin with water. Wash all affected skin areas thoroughly with soap and water. In case of contact with the eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Hazards

Can cause severe burns to eyes, skin, and mucous membranes.

Spill Response Procedure #6 Flammable Solids Spills

First, remove all sources of ignition such as open flames. Call your supervisor. Sweep up spills of flammable solids such as powdered metals and collect in an intact sealable container. Use tools and equipment which do not generate sparks. Manage as a hazardous waste.

Personal Protection

Avoid contact with the waste and stay upwind. Wear protective gloves and other appropriate personal protective equipment to prevent contact with the body. For contact with the skin or eyes, call for help. In case of skin exposure, remove all contaminated clothing and flood the skin with water. Wash affected areas thoroughly with water and soap. In case of contact with eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Spill Response Procedure #7 Toxics Spills

Call your supervisor. Use absorbent materials to absorb liquids. Sweep/scoop up solid materials. Seal contaminated clothing and all other clean-up materials in vapor-tight containers and manage as a hazardous waste.

Personal Protection

Avoid contact with the waste and stay upwind. Wear protective gloves and other appropriate personal protective equipment to prevent contact with the body. For contact with the skin or eyes, call for help. For skin exposure, remove all contaminated clothing and flood the skin with water. In case of contact with eyes, hold the eyes open and flush with water for at least 15 minutes. Report to a medical facility as soon as possible for a medical evaluation.

Hazards

Poisonous.

Spill Response Procedure #9 Flammable Gases: Stop the leak, if you can do it without risk. Isolate area until gas has dispersed. Put the aerosol can into the appropriate container for later disposal. Manage as a hazardous waste.

Spill Response Procedure #10 Reactive Liquids: Clean up with inert, damp, noncombustible material using clean non-sparking tools and place into clean, dry, plastic container for later disposal. Manage as a hazardous waste.

Spill Response Procedure #11 Reactive Solids: Use clean non-sparking tool to collect material and place it into clean, dry, plastic container for later disposal. Manage as a hazardous waste.

Spill Response Procedure #12 Organic Peroxides: Clean up with inert, damp, noncombustible material using clean non-sparking tools and place into clean, dry, plastic container for later disposal. Manage as a hazardous waste.

ATTACHMENT 1
SPILL REPORTING FORM

Contact Information

Caller name:	POC*:
Division:	Division:
Land line (include area code):	Land line(include area code):
Mobile (include area code):	Mobile (include area code):

*POC is the person who has spill details & can provide additional information. Indicate if it's the same as caller.

Location Information

Indoor Location (Complete for a spill inside a building)	**Outdoor Location** (Complete for a spill outside of a building)
Building:	Nearest Building:
Floor:	Cross Street(s):
Room:	Other Location Information (e.g. road, dirt, sewer):
Location in Room:	
Is alarm sounding? (Circle One): Yes No Don't Know	
Is building evacuated? (Circle One): Yes No Don't Know	

Chemical Information

Date of Spill: ____________ Time of Spill:______

Material Information (use reverse side for additional materials)
Chemical/product Name (spell out):
CAS #
Material Type (Circle One): Solid Liquid Gas
Amount Spilled (Circle One): Small Large
Spill Condition (Circle One): Contained Spreading
Can you smell the material? (Circle One): Yes No Don't Know
Attachment 1 continued
Type Container (Circle One):

Can Bottle Other (specify)
Condition of Container (Circle One): Undamaged Damaged Don't Know

Additional Materials (if necessary)

Material 2	Material 3
Chemical Name:	Chemical Name:
CAS #	CAS #
Material Type (Circle One): Solid Liquid Gas	Material Type (Circle One): Solid Liquid Gas
Amount Spilled (Circle One): Small Large	Amount Spilled (Circle One): Small Large
Condition (Circle One): Contained Spreading	Condition (Circle One): Contained Spreading
Can you smell the material? (Circle One): Yes No Don't Know	Can you smell the material? (Circle One): Yes No Don't Know
Type Container (Circle One): Can Bottle Other (specify)	Type Container (Circle One): Can Bottle Other (specify)
Condition of Container (Circle One): Undamaged Damaged Don't Know	Condition of Container (Circle One): Undamaged Damaged Don't Know

Pull Up

JGI EMERGENCY RESPONSE GUIDE

(remove and turn document over for contact information)

PERSONAL INJURY

For EMERGENCY response to a serious or life-threatening injury or illness, always call 9-911 or 911 from a cell phone.

For treatment of NON-EMERGENCY injuries or illnesses:

- Contact a Safety Coordinator and report the incident to the appropriate Health Services Department. **(510) 486-6266** for LBNL employees and **(925) 422-7149** for LLNL employees.
- Work-related injuries that need immediate care, but are not life threatening, can be treated at the John Muir Medical Center Emergency Room **(925) 939-5800**.
- First Aid After-Hours: For minor cuts and scrapes, band aids can be obtained at the front desk, from a Safety Coordinator or Supervisor.
- Non work-related injuries that occur after hours or on weekends, call your personal physician.

Lacerations puncture wounds, strains and sprains

- Contact 1st aid-trained Emergency Response Team members for First Aid.
- Report incident to the appropriate Health Services Department. **(510) 486-6266** for LBNL employees and **(925) 422-7149** for LLNL employees.
- Report incident to your Supervisor and a Safety Coordinator.

Electrical shock

- Immediately de-energize equipment if possible.
- Do not touch victim if source of shock is still connected .
- Call **9-911 or 911 from a cell phone**.
- Administer appropriate First Aid if trained to do so or contact an Emergency Response Team member for First Aid.
- Report incident to your Supervisor and a Safety Coordinator.

Laser beam exposure

- Shut off the laser
- Call **9-911 or 911 from a cell phone** if there is a medical emergency
- Report incident to the appropriate Health Services Department. **(510) 486-6266** for LBNL employees and **(925) 422-7149** for LLNL employees.
- Secure area, keep other employees not involved in response out of the immediate area.
- Report incident to your Supervisor and contact a Safety Coordinator.

CHEMICAL AND BIO SPILL

Chemical and Bio Spills

- Stop Working, alert people nearby and keep doors closed.
- Stop or contain the spill if possible to do so safely.
- If the spilled chemical or material poses an airborne hazard, leave the area or room and post signs at area or room entrances that prohibit entry. Contact a Safety Coordinator or responsible Area Manager.
- Call **9-911 or 911 from a cell phone** if there is a medical emergency or danger to life, health or the environment. If you've been contaminated, follow directions under the SPLASH INJURY section.
- Can it be safely cleaned? Note: Follow the Spill Cleanup Requirements listed below to make this decision.

Chemical Spill Cleanup Requirements: You can clean up a chemical spill if ALL of the following requirements are met:

- The spill is small: two people can cleanup the spill thoroughly within an hour
- You are NOT a high school student, or a participant in an internship program
- There is no potential for release of the chemical to the environment or to spread or track chemical contamination to other areas.
- There are no personal injuries resulting from the spill.
- You are knowledgeable of all of the chemical hazards.
- The clean up procedures are known and you have the proper spill clean up materials.
- You have the proper PPE to protect yourself during the clean up.
- The spill does NOT involve elemental mercury. Call a Safety Coordinator for clean up of all Mercury spills.

If ALL of the above requirements are not met or if you have any doubts about your ability to safely and effectively clean up the spill, then:

- Leave the immediate area.
- Close the door.
- Stay close by and control access — Post the entrance with a warning sign such as "Spill–Do Not Enter" .
- Call a Safety Coordinator or Area Manager for assistance.

Biological Spill Cleanup Requirements: You can clean up a biological spill if ALL of the following requirements are met:

- You are aware of the hazards and have been trained in the cleanup procedures.
- There is no potential for personal injury or environmental damage.
- The appropriate spill cleanup equipment is available.
- It is a small spill - Two people can clean up the spill thoroughly within an hour - **otherwise call LBNL Emergency Preparedness at (510) 486-6999 for assistance**.

Spill cleanup involving microorganism requiring BL 1 & 2 containment:

- Isolate the area to prevent access by non-involved employees.
- Locate the nearest biological spill kit.
- Wear disposable nitrile or latex gloves and a voluntary respirator.
- Use appropriate spill cleanup supplies for your area.
- Cover spill with paper towels or other absorbent material.
- Carefully pour a freshly prepared 10% solution of household bleach around the edges and into the center.
- Allow a 10-minute contact period, up to 20 minutes for human blood or fluids.
- Use paper towels to wipe up the spill, working from the edges into the center.
- Clean up the spill area with fresh paper towels soaked in disinfectant. Follow with water on metal surfaces.
- Properly dispose of cleanup materials:
  a) Non-blood cleanup materials can be disposed of in regular trash
  b) Blood cleanup materials must be disposed of in a red biohazard waste bag and given to the On-Site Health Services Registered Nurse (Room 156A) for proper disposal.

FIRE

Major Fire Response Procedure

- Alert people in the area to evacuate.
- Activate nearest fire alarm
- Call **9-911 or 911 from a cell phone**
- If safe to do so, close doors to confine fire.
- Evacuate the building and proceed to the Assembly Area between buildings 310 and 400, using evacuation routes posted in each building.
- Do not reenter buildings until given the All Clear.

Small Fire Response Procedure

- Alert people in the area to evacuate
- Activate nearest fire alarm
- Call **9-911 or 911 from a cell phone**
- If you are trained, use nearest fire extinguisher

While Using a Fire Extinguisher:

- Be ready to evacuate immediately if the fire cannot be controlled.
- Never enter a room that is filled with smoke.
- If fighting a fire, always keep clear access to an exit. Do not let fire get between you and the exit, and avoid smoke or fumes.
- Once the fire is extinguished, immediately contact your supervisor and a Safety Coordinator.
- If the fire cannot be quickly extinguished, immediately start using the Major Fire Response procedure below.

EARTHQUAKE

EARTHQUAKE Response

- DO NOT RUN, DO NOT PANIC.
- Damage and falling debris may block exits and can cause injury.

DUCK and COVER

- Seek sturdy overhead protection such as a desk, table, work bench, or room corner away from windows.
- If there is no cover, move to a spot in the room away from widows, large top heavy objects and possible falling or flying objects.

HOLD

- Use the protection you've chosen and be prepared to move with it until the shaking stops
- After the shaking stops, evacuate immediately to the JGI assembly area: the central courtyard between Buildings 310 and 400.
- Use the evacuation routes posted in your building.
- Take car keys and small personal items only if safe to do so, as re-entry to your building may be delayed for days.
- Follow JGI Emergency Response Team instructions.
- Do not attempt to re-enter any buildings until instructed to do so.
- Do not leave assembly area or the site until dismissed by the Designated Incident Commander or Emergency Response Team Leader or by a firefighter, the Senior Manager in charge, or the Facilities Manager.

SPLASH INJURY

Hazardous material splashed in eye or onto body

- Rescuers should wear appropriate Personal Protection Equipment (i.e.: nitrile/latex gloves, goggles, lab coat, etc.)
- Remove contaminated clothing.
- Immediately flush affected body areas with water from nearest safety shower/eyewash unit for at least 15 min.
- Use soap for biological splashes to the body, but not for the eyes.
- If the eyes are affected, forcibly hold eyes open with index fingers and thumbs to ensure effective flushing.
- Request emergency medical attention, call **9-911 or 911 from a cell phone**
- Report incident to appropriate Health Services Department. **(510) 486-6266** for LBNL employees and **(925) 422-7149** for LLNL employees.
- Report incident to your Supervisor and a Safety Coordinator.

Hazardous materials injected into body via accidental cuts, needlesticks, etc.

- Rescuers should wear appropriate Personal Protection Equipment (i.e.: nitrile/latex gloves, goggles, lab coats, etc.)
- Flush affected body areas with water for at least 5 and up to 15 minutes and wash with soap.
- DO NOT use strong disinfectants such as household bleach on skin.
- Request emergency medical attention, call **9-911 or 911 from a cell phone**
- Report incident to the appropriate Health Services Department. **(510) 486-6266** for LBNL employees and **(925) 422-7149** for LLNL employees.
- Report incident to your Supervisor and a Safety Coordinator

THREATS

For all items below, contact a Senior Manager and a Safety Coordinator

Telephone Bomb Threats

- Attempt to keep the caller on the line as long as possible and record the time and date of call, age and gender of caller, the phone number (if caller ID available), and the caller's message.
- Call **9-911 or 911 from a cell phone**.
- Evacuate yourself and others immediately from any threatened area or building.

Violence, Hostile or Suspicious Persons

- Take immediate actions to protect yourself and others. Actions depend on the events and may include evacuating, hiding, or locking doors, and notifying other employees.
- Call **9-911 or 911 from a cell phone** as soon as possible.
- For non-emergency workplace violence issues, call Human Resources at **x5676**.

Suspicious Packages and Mail

- If Package or Envelope appears suspicious, set the package or letter down, don't open it or handle it further.
- Warn nearby employees to leave the immediate area and do not touch the suspicious item.
- Call **9-911 or 911 from a cell phone** and LBNL Security at **(510) 486-5472**.
- If possible, wash hands with warm water and soap for at least one minute.

Emergency Response Team Roster

Name	Location	Office Phone	Mobile Phone	Email
Bartolome, Terri	310-355D	(925) 926-5627		tcbartolome@lbl.gov
Beecroft, Chris	310-324	(925) 927-2855		cjbeecroft@lbl.gov
Franaszek, Stephen	310-302	(925) 926-5807	(925) 980-1528	smfranaszek@lbl.gov
Garcia, Kathleen	310-321U	(925) 296-5694	(510) 386-5631	kmgarcia@lbl.gov
Gilbert, David	310-311	(925) 296-5643	(925) 321-1107	degilbert@lbl.gov
Goudeau, Danielle	400-444H	(925) 296-5885	(510) 502-9460	dgoudeau@lbl.gov
Herrera, Joesph	400-443	(925) 927-2501	(925) 963-4759	jmherrera@lbl.gov
Hoover, Cindi	100-150F	(925) 927-2558		cahoover@lbl.gov
Kennedy, Megan	100-118H	(925) 927-2813		mckennedy@lbl.gov
Kollmer, Angela	310-321G	(925) 927-2517		akollmer@lbl.gov
Lindquist, Erika	400-462	(925) 296-5612	(925) 395-1843	ealindquist@lbl.gov
Malmstrom, Rex	400-406A	(925) 927-2821	(925) 405-6702	rrmalstrom@lbl.gov
Madden, Sally	310-321Q	(925) 297-2825		smadden@lbl.gov
Paley, Tatiana	310-321H	(925) 927-2547		tlpaley@lbl.gov
Perrier, Rene	310-346Q	(925) 296-5777		raperrier@lbl.gov
Schackwitz, Wendy	400-468A	(925) 296-5634		wsschackwitz@lbl.gov
Shulse, Christine	400-467B	(925) 926-5817		cnshulse@lbl.gov
Smirnova, Tatyana	310-327A	(925) 296-5774		tsmirnova@lbl.gov
Spunde, Alexander	400-457O	(925) 296-5867		ayspunde@lbl.gov
Taylor, Kristen	310-346	(925) 296-5808		kmtaylor@lbl.gov
Zane, Matthew	100-106	(925) 296-5727	(925) 285-0146	mczane@lbl.gov

LAWRENCE BERKELEY NATIONAL LABORATORY

COMPREHENSIVE EMERGENCY MANAGEMENT PLAN

EM-PLAN-001

Developed by:	Emergency Manager	10/09/2015 Date
Reviewed by:	Deputy, Protective Services	10/9/15 Date
Submitted by:	Department Head, Protective Services	10/20/2015 Date
Approved by:	Chief Operating Officer	11/09/2015 Date
Concurred by:	Laboratory Director	11/9/15 Date

CHANGE SUMMARY			
Issue	**Section**	**Date**	**Description of Change**
000	All		Develop initial plan.
001	All		
002	All	December 2005	
004	All	September 2009	DOE O 151.1C compliance.
005	All	November 2010	DOE O 151.1C compliance.
006	All	March 2012	DOE O 151.1C compliance.
007	All	September 2015	Complete rewrite for recognition of hazardous materials program.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The LBNL Comprehensive Emergency Management Plan (CEMP) has been developed in accordance with the requirements identified in Department of Energy (DOE) Order 151.1C, *Comprehensive Emergency Management System,* and the associated DOE Guides to document the LBNL Emergency Management Program and describe provisions for response to an Operational Emergency at the Laboratory. The Emergency Management Program is also subject to National Incident Management System and State of California guidance for emergency management.

The National Incident Management System (NIMS) is a federal initiative outlined in Homeland Security Presidential Directive 5 (HSPD-5) that provides a standardized nationwide emergency response framework to integrate state, tribal, local government, and private organizations to work together to prepare for, prevent, respond to, recover from, and mitigate the effects of incidents regardless of cause, size, location, or complexity.

The State Emergency Management System (SEMS) (Chapter 1, Division 2 of Title 19 of the California Code of Regulations), is the State of California system that unifies all elements of California's emergency management community into a single integrated system and standardized key elements. SEMS incorporates the use of the Incident Command System (ICS), California Disaster and Civil Defense Master Mutual Aid Agreement (MMAA), the Operational Area (OA) concept and multiagency or inter-agency coordination.

LBNL has developed and implemented a NIMS and SEMS compliant, comprehensive emergency management system designed to minimize the consequences associated with Operational Emergencies involving or affecting laboratory facilities and activities [DOE O 151.1C, CRD 1.a]. It includes emergency planning and preparedness activities necessary for responding to, mitigating, and recovering from emergencies affecting Lawrence Berkeley National Laboratory.

The Operational Emergency Base Program is the framework for response to serious events involving health and safety, the environment, safeguards, and security. This portion of the program is based on a hazards survey that examines the features and characteristics of the site and activities to identify the generic emergency events and conditions applicable to the Laboratory and the hazardous materials that may be affected by these events [DOE O 151.1C, CRD 2 and 2.a.]. This includes accidents such as small fires, explosions, and loss of control of a hazardous container and the potential impacts of such emergencies.

The results of the hazards survey have the potential to expand the Operational Emergency Base Program into an Operational Emergency Hazardous Material Program, if hazardous materials are present in quantities exceeding the defined threshold limits and do not meet the specified exclusion criteria outlined in DOE Guide 151.1-2, *Technical Planning Basis*. The Operational Emergency Hazardous Material Program requires further analysis of any materials that meet or exceed these criteria for documentation in a hazards assessment [DOE O 151.1C, CRD 2.a.(1)(c) and 2.b.(2)]. LBNL possesses chemicals of the type and quantity that expand the program for the laboratory to an Operational Emergency Hazardous Materials Program.

The Emergency Planning Hazards Assessment (EPHA) is the foundation of the Operational Emergency Hazardous Materials Program, providing analytical techniques and further exploring hazardous materials and postulated events present at the lab [DOE O 151.1C, CRD 3.b. and 3.c.(1-2)]. The results of the EPHAs are then used to determine event consequences [DOE O 151.1C, CRD 2.a.(1)(b)]. Emergency Management (EM) uses the EPHA data and results to develop this plan, implementing procedures, predetermine protective actions, identify resources (personnel, facilities, equipment) required to respond to and mitigate postulated emergency events [DOE O 151.1C, 3.b.(1)(a) and 10.b.(3)].

A trained and qualified Emergency Response Organization (ERO) is a critical component of the Emergency Management Program [DOE O 151.1C, CRD 8]. The goal is to be as self-sufficient as possible in handling emergency situations within the boundaries of the laboratory; however, Memorandums of Understanding (MOUs) allow for mutual aid assistance from local, city, county, and state agencies. The laboratory is identified as a special district within the Alameda County Operational Area and in accordance with SEMS is supported with the use of local and state expertise and resources [DOE O 151.1C, CRD 9].

The need for coordinated emergency response is what distinguishes Operational Emergencies, continuity events, and disasters from the emergencies that the Fire Department, Protective Force, and other LBNL organizations deal with daily. The laboratory is prepared to initiate and coordinate emergency response using available resources in order to minimize the loss of life and property as well as to protect the environment. This plan establishes and identifies the groups of individuals that provide support in the event of an Operational Emergency at the laboratory.

Another essential element of the Emergency Management Program includes the emergency facilities and equipment necessary for responding to, mitigating, and recovering from emergencies or accidents affecting the Laboratory [DOE O 151.1C, CRD 10, 10.a. and 10.b]. Facilities and equipment are available on site for medical, decontamination, decorporation, chelation, firefighting, security, and other response activities. The facilities and equipment necessary to mitigate emergency events are based on the results of the hazards assessment and analysis as well as other non-classifiable Operational Emergencies [DOE O 151.1C, CRD 3.b.(1)(a)].

DOE O 151.1C requires initial emergency notifications be made promptly, accurately, and effectively to emergency response personnel, workers, and appropriate DOE elements and other federal, state, and local authorities [DOE O 151.1C, CRD 12 and 12.a]. Consequence assessments must be accurate and developed in a timely manner throughout the emergency to provide estimates of on-site and off-site consequences of actual or potential releases of hazardous materials [DOE O 151.1C, CRD 13 and 13.a.(1)]. Assessments are integrated with the emergency categorization and classification (if applicable) and protective action decision-making, and then coordinated with off-site agencies [DOE O O151.1C, CRD 13.a.(2)]. During consequence assessment the Emergency Management Team (EMT) is required to make accurate and timely follow-up notifications for the emergency classification level, changes to emergency conditions, until the emergency is terminated.

Once an Operational Emergency is declared, protective actions must be promptly and effectively implemented or recommended in order to minimize the consequences of the emergency to protect the health and safety of workers and the public [DOE O 151.1C, CRD 11]. These protective actions are reassessed throughout the emergency, using the consequence assessment phase, to assure modifications are made as necessary. Once the emergency has been assessed, protective actions are implemented, and response has been initiated, reentry activities can be planned, coordinated and accomplished in the safest manner possible. With any Operational Emergency, there is potential for injury or contamination of personnel. Emergency medical support is planned and effectively implemented with on-site and off-site medical facilities for the transport and treatment of potentially contaminated, injured personnel [DOE O 151.1C, CRD 15].

Predetermined criteria must be met and coordinated with off-site agencies for the termination of an Operational Emergency [DOE O 151.1C, CRD 17]. Once the emergency has been terminated, recovery operations will be initiated and conducted to return the affected operation(s) to a normal configuration. Communication must be maintained with federal, state, and local governments regarding the planning, management, and conduct of associated recovery activities. These activities are accomplished while assuring the health and safety of the workers and the public.

The Emergency Public Information Program requires accurate and timely information be provided to workers, the news media, and the public during an emergency. These efforts are conducted to establish facts and avoid speculation, and are coordinated with DOE, state and local governments, and federal emergency response organizations, as appropriate [DOE O 151.1C, CRD 16].

The elements mentioned above are required by DOE O 151.1C. The Program Administration element is responsible for the creation and implementation of emergency plans and procedures to establish effective organizational management and administrative control [DOE O 151.1C. CRD 4]. Plans and procedures are used to train personnel on what to do in the event of an emergency, whether they are responsible for implementing protective actions or for responding to the actual event.

Formal training and drills verify procedures and plans are accurate, implemented and that personnel are familiarized with expected actions and emergency equipment and facilities. A comprehensive, coordinated, and documented program of training and drills has been established to accomplish preparedness activities associated with developing and maintaining emergency response capabilities and informing Laboratory personnel about general emergency management and continuity. This training provides the hazards associated with laboratory operations and trains on the protective actions for the laboratory [DOE O 151.1C. CRD 5.a.(1) and 5.b.(1)].

In addition to training and drills, a formal exercise program has been implemented to validate emergency response to simulated, realistic emergency events and conditions [DOE O 151.1C. CRD 6]. It is through exercises and assessments that the elements of the Emergency Management Program are validated, known as readiness assurance. Readiness assurance provides the framework for assuring that emergency plans and procedures are adequate, by means of evaluations, exercises, and assessments, and provides a mechanism for improvements through corrective actions and lessons learned [DOE O 151.1C. CRD 7]. It is the goal of EM staff to continually improve the ability to respond to Operational Emergencies to ensure protection of the people, laboratory assets, and the environment.

1. INTRODUCTION

The Comprehensive Emergency Management Plan (CEMP), a site-wide document, has been developed to document the LBNL Emergency Management Program and describe the provisions in place for response to an Operational Emergency impacting LBNL personnel or operations [DOE O 151.1C, CRD 4.c]. The CEMP is supported by a series Emergency Response Procedures (ERPs) for response groups, as well as facility-specific and stand-alone plans and procedures that contain more detailed information/instructions [DOE O 151.1C, CRD 4.d].

The CEMP is designed specifically to implement the requirements outlined in DOE Order 151.1C and recommended program initiatives outlined in DOE Guides 151.1. Other departmental orders and legislation that require this plan include: 10 Code of Federal Regulations (CFR) 835.1302, 10 CFR 851, 29 CFR 1910.38, 29 CFR 1910.119 and 120, ISO 14001, and SEMS [DOE O 151.1C. CRD 2.c.(2)].

1.1 Purpose

The purpose of the LBNL CEMP is to provide LBNL, the DOE, Berkeley Site Office (BSO), and University of California, Berkeley, with an effective and efficient Emergency Management Program that develops and maintains the capabilities necessary to create or produce acceptable levels of protection in the event of an Operational Emergency at the Lawrence Berkeley National Laboratory. The goal is to protect the health and safety of LBNL workers, emergency responders, the public and surrounding communities, the environment, and national security. Facilitation is accomplished by Protective Services - Emergency Management (PS-EM) through its development and implementation of a comprehensive emergency management system that is designed to:

- Minimize the consequences of emergencies involving or affecting LBNL facilities and activities, including transportation operations/activities.
- Protect the health and safety of workers and public from hazards associated with LBNL operations and those associated with decontamination, decommissioning, and environmental restoration.
- Prevent damage to the environment.
- Promote effective and efficient integration of applicable policies, recommendations, and requirements, including federal, state, and local interagency emergency plans [DOE O 151.1C, CRD 1.a-d and 2.c.(2)].

The operational use of the CEMP is primarily in the context of an emergency response overview plan that documents key activities (i.e., emergency planning, emergency response, recovery, and readiness assurance). In addition, the CEMP fulfills other specified emergency plan requirements, to include:

- Describing the provisions or preparatory measures for response to an Operational Emergency at LBNL.
- Identifying roles, responsibilities, and requirements associated with program administration, the ERO, individual positions, operations, and interfaces.
- Complying with the requirements of NIMS and SEMS.

1.1.1 Plan Updates

Protective Services - Emergency Management initiates an annual review of the LBNL CEMP [DOE G 151.1-3, P 2.13]. The lead organizations (functional areas of the ERO) are assigned specific emergency response actions, as well as completing a review and providing comments for applicable plans and procedures. PS-EM will review submitted comments and revise the plan accordingly. Following the review by lead organizations, the CEMP is distributed to other LBNL organizations, select PS-EM personnel, the Protective Services Chief and Deputy, and the BSO Emergency Management Coordinator for review, comment, and approval [DOE O 151.1C., Chapter 1, 9.c.(1)].

When updates to the CEMP are made, the lab-wide general emergency management training will be reviewed and updated as necessary [DOE O 151.1C, CRD 5.a.(1)].

1.1.2 Plan Approvals

The following organizations approve the CEMP.

- Laboratory Director
- Chief Operations Officer
- Operations Directorate
    - Protective Services Chief
    - Protective Services Deputy Chief
- Berkeley Site Office (BSO)

1.1.3 Plan Distribution

The following organizations receive copies (electronic or hard copy) of the CEMP.

- BSO Emergency Management
- DOE/NNSA Program Secretarial Officer
- DOE/NNSA Director, Office of Emergency Operations

The CEMP is available on the Protective Services website. LBNL will provide hard copies of the CEMP to representatives of Alameda County, City of Berkeley, City of Oakland, University of California at Berkeley, and the State of California upon request.

1.2 Scope

The LBNL CEMP is applied at the site level and specifically addresses Operational Emergencies within the boundary of the Laboratory located in Alameda County and within the property boundaries of leased facilities throughout the San Francisco Bay Area. Off-site facilities will be described in more detail in Section 1.5. This area includes the site and physical boundaries outlined in Appendix A, LBNL Site Map with Zones, and Appendix B, LBNL Site and Off-Site Facilities Map. The CEMP does not address issues related to an Energy or Emergency Assistance Emergency, but applies to planning and preparedness for incidents that could result in an Operational Emergency.

In general, an Operational Emergency is a major unplanned or abnormal event or condition that meets the following criteria:

- Involves or affects LBNL facilities and activities, on site and off site.
- Causes or has the potential to cause serious health and safety or environmental impacts.
- Requires resources from outside the event scene to supplement the initial response.
- Requires time-urgent notifications to initiate response activities at locations beyond the event scene [DOE O 151.1C, CRD 11].

NOTE: This may include events that are initiated outside the boundaries of the laboratory, including transportation accidents, which adversely impact the site.

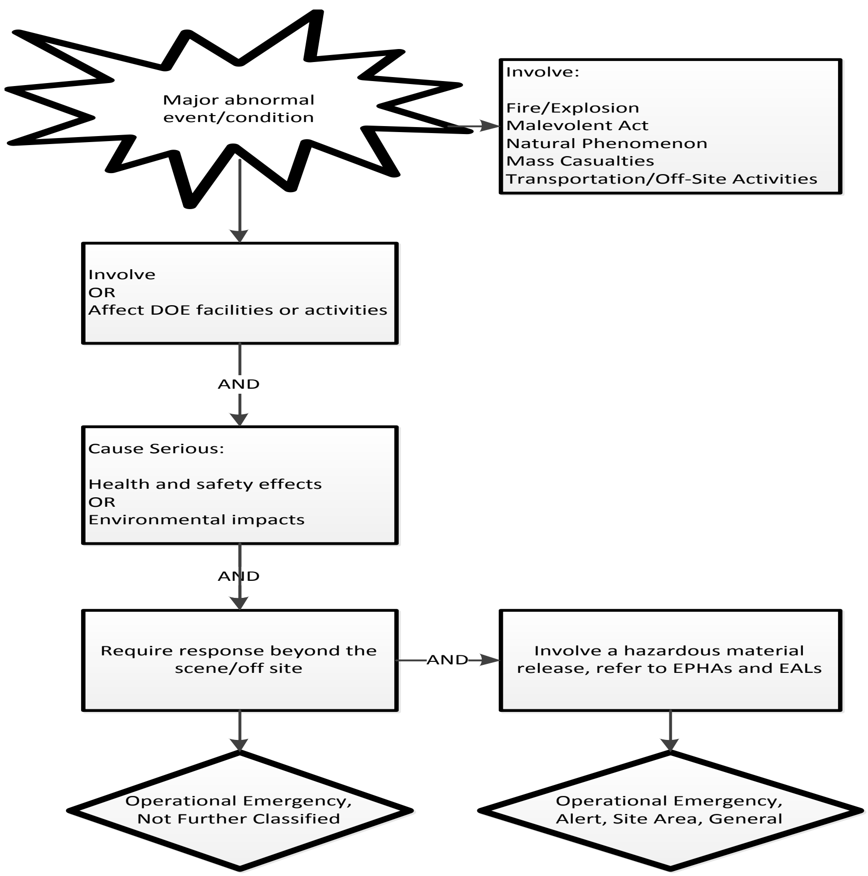


Figure 1 – Operational Emergency Events

Classifiable Operational Emergencies are events that involve the uncontrolled release of a hazardous material and must meet the following criteria to meet the threshold of an Operational Emergency:

- Immediately threaten or endanger personnel who are in close proximity of the event.

- Have the potential for dispersal beyond the immediate vicinity of the release in quantities that threaten the health and safety of on-site personnel or the public.
- Have a potential rate of dispersal sufficient to require a time-urgent response to implement protective actions for workers and to make recommendation for protective actions for the public [DOE O 151.1C, CRD 2.b.(1) and 11].

The CEMP provides an overarching framework for protective actions and recognition and response to Operational Emergencies. The purpose of classifying an Operational Emergency is to provide a system for timely notifications and rapid communication of critical information to initiate the appropriate time-urgent emergency response actions. Incidents that can be controlled by employees in the immediate/affected facility or area, or that do not pose a significant hazard to safety, health, and/or the environment, do not constitute an Operational Emergency and are not covered by the CEMP. Reference PUB 3000, Chapter 15, for reporting and categorization of non-Operational Emergency events.

The Emergency Management Program and consequently the CEMP are the last line of defense to protect the health and safety of workers, the public, and the environment. This includes DOE activities that could result in exposure to hazardous materials. Additionally, this plan serves as the emergency operating plan as described in Title 19 California Administrative Code 301.230, and implements a series of MOUs entered into with off-site agencies such as the California – Office of Emergency Services (CAL-OES).

The LBNL CEMP applies to LBNL employees and subcontractors, vendors, and visitors, and specifically addresses actions/activities executed within the boundaries of LBNL and on property of off-site locations. DOE-BSO and tenant organizational entities residing on the site are also subject to this plan. The plan covers three types of emergencies: natural phenomenon, man-made, and technical hazards. The following identifies the emergency types planned for based on probability and consequence:

- Natural Phenomena
  - Earthquake
  - Severe Weather
  - Flooding/Landslides
  - Wildland Fire
- Man-Made Disasters
  - Malevolent Acts/Terrorist
  - Cyber Attack
  - Security Event
- Technological/Accidental Events

- Hazardous Materials Release
  - Fire/Explosion

For more information on the hazards and emergencies specific to the laboratory, reference EM-RPRT-001, Emergency Planning Hazards Survey (EPHS) for LBNL, to include off-site facilities. Additional planning efforts and predetermined criteria will be provided for technological hazards in the Emergency Planning Hazards Assessments (EPHAs) for the site.

Separate plans have been developed for planning to mass casualties, cyber-attack, and infectious disease/pandemic/epidemic events. Plans that augment the CEMP and may be used in conjunction include the following:

- Continuity Program Plan, EM-PLAN-002
- Cyber Security Threats, Vulnerabilities, and Risks
- Emergency Public Information Plan, EM-PLAN-011 [DOE O 151.1C, CRD 16.a]
- Fire Department Baseline Needs Assessment
- Infectious Disease Disaster Plan, EM-PLAN-003
- Information Technology Operations Plan
- Site Environmental Report
- Site Security Plan

1.3 Planning Assumptions

1.3.1 Hazardous Materials

The goal of the LBNL Emergency Management Program is to plan for rapid and efficient response to emergency conditions that may impact the health and safety of people, property, and the environment. Planning is based on self-assessment and risk analysis. Many buildings at LBNL have hazardous materials that pose a potential threat to the health and safety of workers and the public, thus the Operational Emergency Base Program must be expanded to implement the additional requirements of an Operational Emergency Hazardous Materials Program primarily through the identification of additional risks caused by hazardous materials [DOE O 151.1C, CRD 3]. This portion of the hazard analysis for emergency planning is information-gathering from on-site organizations that produce, process, handle, store, and transport hazardous materials (HAZMAT) such as biological agents and toxins, chemical and radiological materials that do not meet the exclusion criteria during the EPHS. These hazardous materials have the potential to pose a serious threat to workers, the public, and the environment and planning for such emergencies requires identification of the hazards and potential consequences from unplanned releases of (or loss of control over) such materials using EPHAs. The EPHAs are the technical planning basis for determining the extent and scope of the Operational Emergency Hazardous Materials Program.
The CEMP provides implementation of the requirements for an Operational Emergency Hazardous Materials Program based on hazards analyses and:

- Provides the framework for response to serious incident involving health and safety, the environment, safeguards, and security [DOE O 151.1C, CRD 2.c.(1)].
- Assures the requirements of DOE regulations and directives, regulations, developed by other federal and state agencies and local requirements, as applicable, addressing emergency issues are seamlessly integrated without duplication of emergency management effort [DOE O 151.1C, CRD 2.c.(2)].

The results and conclusions of the technical planning basis are subsequently used to develop the Emergency Management Program and the CEMP to assure that the documents are "commensurate with the hazards" at the laboratory. EPHA data and results are also used to identify resources (i.e., personnel, facilities, personnel protective equipment (PPE), and equipment) required to respond to, and mitigate, the postulated emergency events [DOE O 151.1C, CRD 3.b.(1)(a) and 10.b.(3)]. Emergency preparedness includes the acquisition and maintenance of equipment, facilities, and personnel. These resources are subject to the conduct of training and drills for qualification and testing and exercises to ensure that LBNL is prepared for effective response to emergencies.

1.3.2 Standardized Emergency Management System (SEMS)

The lab is designated as a special district under the Alameda County Operational Area recognized by the State of California for emergencies that require multi-agency response and multi-jurisdictional coordination. Special districts under SEMS are units of local government (other than a city, county, or city and county) with authority or responsibility to own, operate or maintain a project (as defined in the California Code of Regulations for purposes of natural disaster assistance). Special districts are primarily responsible during emergencies for restoration of services that they normally provide. They may also be responsible for safety of people at their facilities or on their property and for warning of hazards from their facilities or operations. The requirement to use SEMS includes fulfilling the management and coordination role of local government and providing for the five essential SEMS functions of management, operations, planning, logistics and finance. Those facilities that are off-site fall under the jurisdiction in which they reside for emergency response; however, personnel are expected to follow safety measures and protective actions as identified by the laboratory and may require additional specialized response for response to an event. This is especially true if the off-site facility has special hazards, such as hazardous materials.

1.3.3. National Incident Management System

Response to emergencies and disasters are based on the National Response Framework and an integrated system, known as NIMS. NIMS is a comprehensive, national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines. The intent of NIMS is to be applicable across a full spectrum of potential incidents and hazard scenarios, regardless of size or complexity. The laboratory does emergency planning and interface with municipal and county involvement, as well as with the state and some federal agencies. Operations conducted under this plan will be accomplished based on this model.

1.4 Concept of Operations

The LBNL Emergency Management Program is comprised of comprehensive emergency management system activities, including: emergency planning, emergency preparedness, readiness assurance, emergency response, and recovery. The concept on which emergency planning is based, begins with the establishment of an Operational Emergency Base Program that coordinates and integrates the emergency planning and preparedness requirements of applicable federal, state, local laws, regulations, and ordnances. The Operational Emergency Base Program provides the framework for response to serious events involving health and safety, the environment, safeguards, and security. Such events (e.g., fire, earthquake, etc.) are not unique to LBNL operations [DOE O 151.1C, CRD 2.c.(1)].

Emergency response includes the application of resources to mitigate consequences to workers, the public, the environment, and the national security, and initiate recovery from an emergency. Emergency response is initiated based on activation of the 911 or 6999 systems and typically uses Emergency Action Levels (EALs) to categorize and classify the emergency. Emergency responder actions are outlined in a series of ERPs at the department/division level. EMT actions are outlined in a series of job aids and procedures developed by the Emergency Management staff.

Recovery and reconstitution includes planning for and actions taken following termination of an emergency to return the facility/operation to normal status. Recovery and reconstitution planning occurs on a case-by-case basis and is followed by a full investigation to determine the root cause, in accordance with DOE O 225.1B, and development of a corrective action plan to prevent recurrence in accordance with DOE O 414.1D. The phases of Emergency Management outlined in the paragraphs above are summarized below.

TABLE 1 – EMERGENCY MANAGEMENT PHASES

PHASE 1	**PLANNING**	Identify hazards and potential consequences Analyze hazards Develop the technical planning basis - Identification of hazards and potential consequences - Establishment of the Emergency Planning Zone (EPZ) - Development of protective actions - Identification of the Emergency Response Organization (ERO) - Identification of emergency facilities and equipment Develop plans, procedures, policies
PHASE 2	**PREPAREDNESS**	Develop and conduct training - General emergency management training - ERO personnel Develop and conduct drills (response/recovery/reconstitution activities) Inspect and test (equipment, systems, facilities, personnel) Develop processes and tools for documenting the event Identify, attain, maintain emergency response resources - Establish off-site mutual aid and agreements Represent LBNL in the emergency management community Conduct off-site interface activities

PHASE 3	**RESPONSE**	Categorize/classify the event Provide initial/ongoing notifications (workers, public, government agencies) Develop and submit situation reports Determine, implement, and communicate protective actions/measures Recall and activate emergency response personnel and support personnel Mitigate the event - Consequence assessment - Field monitoring - Reentry (search/rescue, damage control, accident assessment, decontamination, triage, decorporation/chelation) Document the event (create a timeline) Relocate, if necessary Terminate the event
PHASE 4	**RECONSTITUTION/ RECOVERY**	Submit Final Report for Operational Emergencies (DOE O 232.2) Perform an accident investigation (DOE O 225.1B) Develop Recovery Plan - Assessment of resources (facilities, equipment, personnel) - Debris removal - Decontamination of infrastructure - Restoration of vital systems and infrastructure Resume normal operations
PHASE 5	**READINESS ASSURANCE**	Develop and conduct exercises/evaluations Document and conduct assessments Submit After Action Reports (AARs) for exercises Identify and implement program improvements - Corrective actions - Lessons learned Submit Emergency Readiness Assurance Report

1.4.1 Pre-Incident Mitigation

Mitigation activities are those that eliminate or reduce the probability of a major emergency or disaster's occurrence. Also included are those long-term activities that lessen the undesirable effect of unavoidable hazards. Examples include: hazardous material reduction and control, building codes, land slide abatement, forest thinning, work planning and control, emergency planning hazards assessments, etc. These mitigation activities are embodied in environment, safety, and health and other policies and procedures published in the Requirements and Policies Manual.

1.4.2 Preparedness

Preparedness activities serve to develop the response capabilities needed in the event of an emergency. Planning, the conduct of training and drills, development of emergency public information, and warning systems are among activities conducted under this phase. Preparedness activities also are described in specific procedures, which are not discussed in detail within the CEMP, but incorporated by reference. For example, each occupied building at LBNL is represented by an Building Emergency Team (BET) lead to provide building-level preparedness activities, develop a Building Emergency Plan (BEP), conduct of drills, and coordinate the implementation of protective actions.

Emergency and non-emergency incidents must be reported. Workplace violence is reported in accordance with Policy 02.02.006.000. Injuries, illnesses, chemical exposure, radiological incidents, fires, explosions, unsafe acts and conditions are reported in accordance with Policy 07.01.009.000.

These incidents have the potential to be an Operational Emergency and are categorized in accordance with the Occurrence Reporting Policy 07.03.001.001. Property damage, loss of assets, security issues, and incidents of security concern are those events that pose threats to national security interests or DOE assets, create dangerous security situations, degrade security measures, or potentially endanger the health and safety of the workforce [DOE O 151.1C, CRD 11.a.(2)(c)]. These events must be reported in accordance with the Site Security Plan. Certain security incidents also have the potential to escalate into an Operational Emergency.

During an Operational Emergency, the Laboratory Director is held ultimately responsible for the preservation of life and protection of property. The Laboratory Director (or successor) functioning through the ICS will be responsible for all emergency operations within the site. The Laboratory Director has directed that Chief Operating Officer (COO) will have delegation for this responsibility for day-to-day operations and the Emergency Director will assume this responsibility during EOC activations.

Alameda County Fire Department (ACFD) and University of California Police Department (UCPD) serve as the lead responders for the laboratory, providing direction related to the mitigation of the incident. Emergency calls from the laboratory typically go to UCPD Dispatch and Alameda County Regional Emergency Communications Center (ACRECC) for dispatch of field response.

If necessary, the Emergency Manager has responsibility for categorization/classification and declaration of an Operational Emergency; activating emergency facilities; recalling EMT personnel; accomplishing emergency notifications; issuing and authorizing protective actions; oversight for managing media issues; procuring emergency supplies, equipment, and requesting support; and terminating the Operational Emergency status. Associate Laboratory Directors (ALD) and Division Directors, who have line management responsibility for the safety of their personnel, continue to provide direction to their personnel in times of emergency. During any emergency situation; however, ALD/Division Directors must implement the emergency response and mitigation efforts coordinated through the ERO.

Personnel in the EOC provide support for the Incident Command Team (ICT) and focus on life safety initiatives while protecting the environment and laboratory assets through strategic decisions. The EOC is used to conduct categorization and classification of Operational Emergencies, determine protective actions, conduct necessary notifications, document the event timeline and key decisions, request additional resources as necessary, and plan for recovery efforts.

LBNL is a DOE research facility, contracted through the University of California for management and operations of the laboratory. The DOE-BSO Manager and DOE-BSO Emergency Manager comprise the Emergency Oversight Team (EOT) and are notified for emergencies and respond to the EOC. DOE-BSO is the primary liaison for DOE Headquarters (HQs) and provides oversight for public information efforts within the laboratory. If necessary, DOE-BSO has the authority to assume command and control of the laboratory's response to an Operational Emergency.

1.4.3 Operational Emergencies

The site's Emergency Management Program is concerned with hazards that might exist or occur on site to include natural phenomenon, fires/explosions, malevolent acts, and mass casualties. Also of concern are hazards in Alameda County and Contra Costa County or other nearby counties that could impact laboratory employees and site operations. These types of events may be categorized as Operational

Emergencies, not requiring further classification. For emergencies that cause or result in a loss of control over hazardous materials, the Operational Emergency is further classified to an Alert, Site Area, or General Emergency. Classifiable emergencies cannot occur at the off-site locations. LBNL facilities that have the potential to generate a classifiable Operational Emergency have been analyzed and are included in an EPHA. A formal declaration of an Operational Emergency at the site is the responsibility of the Emergency Manager. The following information briefly describes the laboratory's concept of operations for mitigating, preparing for, responding to, and recovering from or to an Operational Emergency.

1.4.4 Response

During the response phase, emergency services are provided as necessary to end the emergency event, reduce injury and death, while protecting the environment and laboratory assets. These activities help to reduce casualties and damages while recovery and reconstitution actions are developed. Response activities include implementation of protective actions, firefighting and rescue, emergency medical services, security measures, and other similar operations addressed in this plan and associated Standard Operating Procedures developed by each response element.

Upon arrival, the Incident Commander takes responsibility for the scene under the ICS structure. A formal Incident Command Post (ICP) will be established and clearly identified and reported to the EOC. Once established, the event's ICT can be expanded to accommodate integration of other laboratory functional elements (i.e., Facilities and EHS personnel); county, state, and federal agencies, if necessary; or can scaled back if the incident is resolved.

The Incident Commander and staff will begin a scene size-up or rapid assessment of the situation to determine if the incident can be handled by first responders or if additional assistance is needed. If the situation requires resources above those normal resources at the disposal of the Incident Command Team, assistance from local mutual aid systems are available to the Incident Commander. The request for mutual aid to respond to the event typically requires declaration of an Operational Emergency. Once this occurs, the Emergency Manager will activate the LBNL EOC in accordance with EM-PROC-001, and recall necessary EMT/EOT personnel.

The Alameda County Office of Emergency Services and Homeland Security, as well as CAL-OES and the DOE HQs Watch Office, are notified of the emergency using EM-ERO-001. Once the EOC is activated and declared operational, joint communications will be maintained between the ICP, LBNL EOC, and county and city organizations. DOE-BSO emergency management staff will relocate to the EOC, to staff the EOT and maintain communications between the EOC and DOE HQs Watch Office.

1.4.5 Activation of the EOC

Staffing of EMT positions in the EOC is orderly, controlled, and verifiable. Activation involves those steps necessary to power up EOC computers, the video wall, sound system, etc. The EOC will be declared "operational" by the Emergency Manager when minimum staffing requirements have been met. EMT members conduct their response activities in accordance with position-specific job aids, supplemented by event-specific job aids, plans, and reference binders. The incident planning action process will also identify objectives necessary to mitigate and respond to the event. Once activated, the EMT will remain operational until a formal decision is made to terminate the emergency and enter recovery (reference EM-JAID-013).

The normal operating organization will transition to an ERO immediately after an Operational Emergency is declared. The defined authorities, responsibilities, tasks, and lines of communication of the ERO should supersede those of the normal operating organization for the duration of the emergency. The ERO should incorporate the capabilities of the normal operating organization, augmenting them as needed to meet the functional and operational requirements of the emergency response facilities, defined for the specific Operational Emergency, normally within an hour after the declaration of the emergency.

Protective Services – Emergency Management (PS-EM) staff, housed in Building 48, monitor the news, weather, and radios for UCPD and ACFD. This is known as the day-to-day operations of the LOC. Once first responders are dispatched, the LOC is activated into a standby mode. The LOC also operates in standby mode for special events, VIP visits, severe weather, potential security events, and during times of civil unrest that has the potential to impact the laboratory or off-site locations. For these types of events PS-EM are typically activated. ACFD and/or UCPD may also be activated. During stand-by mode, an event plan may be developed for special events, VIP visits, or severe weather. For other stand-by events listed above, a timeline and ICS forms are completed. Activation of the EOC will be initiated by the Emergency Manager in accordance with EM-PROC-001.

Limited activations occur when certain sections of the EMT are recalled and incident action planning is needed without an Operational Emergency being declared. Typically, this only involves the Command Section of the EMT, but other sections may be recalled as needed. During a limited activation, a timeline and ICS forms are completed. These types of events may involve fires, injuries, or exposures to hazardous materials. These events have the potential to be escalating or cascading in nature.

For declared Operational Emergencies, full activation of the EOC and recall of the ERO occurs. Notifications are made to DOE Headquarters, as well as state and local agencies. Operational Emergencies may impact one building, the site, or the region through a catastrophic event. By definition, Operational Emergencies exceed the resources of the laboratory, thus mutual aid is requested by the ICT or EMT. If necessary, the Emergency Manager or Incident Commander can also request state assistance from CAL-OES as a special district of the Alameda County Operational Area. For regional events, the state's EOC will provide support in the coordination of response and recovery. Mutual aid resources at the local level and state and federal resources are defined in Section 3.

A Recovery Manager is identified for limited and full activations. It is at the discretion of the Emergency Director and/or Emergency Manager as to whether or not a standby activation requires recovery efforts. Please refer to Section 12 for recovery and reconstitution efforts.

1.4.6 Emergency Response

LBNL strives to be self-sufficient in its approach to emergency response and management and maintains a wide range of emergency response capabilities that can be deployed in the event of an emergency. Overall management and coordination of the field emergency response is accomplished through and managed by the IC. Typically the IC will be the senior ACFD employee at the scene. Additional first responders include UCPD Security Force with support from various laboratory employees from EHS, Facilities, and Protective Services. ICT field response can be supplemented through EOC operations and support from the EMT, if necessary.

For medical emergencies, ACFD and Protective Services have a cadre of EMT-Paramedics and EMTs, in addition to the medical capabilities of Health Services. ACFD, along with EHS would respond to hazardous material situations. For security events, there are SPOs in addition to a site Security Manager and liaison from UCPD. When 911 calls are received, Protective Services reports to the scene. This is typically the responsibility of the Field Observers; however, Security or Emergency Management may also deploy. Due to the high probability of lower consequence events and the potential for cascading events the EOC goes into a standby mode, in which a timeline is captured and PS-EM personnel reach out to the affected facility's BET Lead and the Field Observer for information and to provide support.

An essential element of almost any disaster relief effort is support and assistance that is provided by private relief organizations that provide emergency shelter, distribute food, medicine, and other supplies. Several agencies to assist the public are available to provide disaster assistance for regional emergencies. For more information on private organizations, reference Section 3.6. For the various activation levels and triggers of the EOC and EMT, see Appendix D.

1.4.7 Reentry

Each emergency is a unique event therefore the requirements for facility or area reentry activities will depend on the nature of the specific incident and may occur during the response and/or recovery phases of an Operational Emergency. Reentry activities are performed to accomplish specific objectives during the response phase and may involve high-risk, time-urgent actions that will generally fall into search and rescue missions, mitigation efforts, damage control, and accident assessment activities.

Reentry is planned before entering the hazardous area and conducted prior to termination of an emergency. The response structure must be flexible and capable of responding to a wide range of conditions while performing reentry activities, to include reentering a facility or affected area that has been evacuated or closed to personnel access during the course of the emergency. Reentry activities are to be carried out properly and safely, and are accomplished through the ICT. High-risk (doses/exposures may exceed the occupational or administrative limits) reentry is conducted at the discretion of the IC and in accordance with Standard Operating Procedures (SOPs) with input from the EHS Manager. The IC must determine the need for high-risk reentry based on the potential to:

- Save lives.
- Search for people.
- Characterize the hazardous environment.
- Mitigate the hazard.
- Determine if the infrastructure is structurally sound.

Reentry decisions will be the responsibility of the Emergency Director, with input from the IC and EHS Manager, weighing the risk versus benefits and other reentry objectives and methods and considering the potential for success and the specific hazards with which the reentry team will be exposed. The Incident Commander can make the reentry decision to expedite rescue efforts where victim(s) are considered to be alive.

Reentry related to a contaminated area is performed to rescue personnel; contain an area of contamination; or accomplish actions that, if delayed, could result in a significant deterioration of the situation. Reentry activities are accomplished by qualified individuals wearing proper personal protective equipment (PPE). For more information on reentry, refer to the ESH Manual, Section 5.2.

1.4.8 Termination of an Operational Emergency

Event termination is accomplished when the incident threat/hazards have been removed or satisfactorily mitigated. The Emergency Manager will recommend consideration for termination upon the completion of response activities listed in EM-JAID-011 and EM-JAID-012.

The Incident Commander, Emergency Director, Emergency Manager and the DOE-BSO Manager will coordinate necessary termination activities identified on EM-JAID-011 and EM-JAID-012. The response will then transition to recovery under the direction of an appointed Recovery Manager.

1.5 Site History

Berkeley Lab was founded in 1931 by Ernesto Orlando Lawrence, a UC Berkeley physicist who won the 1939 Nobel Prize in physics for his invention of the cyclotron. The cyclotron is a circular particle accelerator that opened the door to high-energy physics. It was Lawrence's belief that scientific research is best done through teams of individuals with different fields of expertise, working together; a Berkeley Lab teamwork concept legacy that continues today. In the world of science, Lawrence Berkeley National Laboratory is synonymous with excellence and is unique among the SC laboratories; facilitated by the following achievements/highlights:

- Thirteen Nobel Prizes have been awarded to scientists associated with Berkeley Lab, and dozens of Nobel Laureates have either trained at the Lab or had significant collaborations with Berkeley Lab staff;
- Fifty-seven scientists are members of the National Academy of Sciences, one of the highest honors for a scientist in the United States;
- Thirteen scientists have won the National Medal of Science, the Nation's highest award for lifetime achievement in fields of scientific research;
- Eighteen engineers have been elected to the National Academy of Engineering; and
- Three scientists have been elected into the Institute of Medicine.

In addition, LBNL has trained thousands of university science and engineering students who are advancing technological innovations across the nation and around the world. LBNL is also home to many highly utilized "user facilities"; hosting qualified researchers from other laboratories, universities, and industry from around the world, as well as college undergraduates, graduate students, and postdocs. This promotes the overarching mission of the DOE "to advance the national, economic and energy security of the United States; to promote scientific and technological innovation in support of that mission…" and the strategic goal of the DOE/Office of Science (SC) "to protect our national and economic security by providing world-class scientific research capability and advancing scientific knowledge."

1.6 Site Overview and Description

LBNL is a member of the national laboratory system supported by the DOE through the Office of Science. It is managed by the University of California (UC) and is charged with conducting unclassified research across a wide range of scientific disciplines. LBNL employs approximately 4,300 employees, 3,950 affiliates (including facility users), and 40 contract employees; and hosts an average of 19,000 visitors (including foreign nationals and U.S. citizens) annually. With students and visiting scientists, DOE personnel, etc., the site's population during normal working hours often approaches 5,000 people. Its projected total budget for FY2015 is $1,181 million, including funding from the American Recovery and Reinvestment Act, and Work for Others.

The laboratory's main site is located on a 202-acre site in the hills above the University of California at Berkeley (UCB) campus with a view of the San Francisco Bay. There are more than 200 "buildings" on site, of which approximately 82 are occupied with eight occupied research facilities located off site. Buildings on site involve research, administration, and operations support. Support facilities on the site include office buildings, a cafeteria, guest house, control rooms, fire station, shipping/receiving building, and warehouses. Other structures are mechanical rooms and waste storage facilities. In addition to the main site, LBNL occupies eight off-site locations throughout the San Francisco Bay Area. Off-site facilities are in Berkeley, Emeryville, Oakland, and Walnut Creek and employ approximately 1,500 personnel.

PS-EM has separated the laboratory into zones, determined by geographical location and population using natural breaks and boundaries for emergency planning purposes. Zones have been established to assist with the implementation of protective actions, which can be viewed on the map in Appendix A. Due to the hazards at the site surrounding an earthquake, hazardous materials release, or urban wildland fire, the site may need to conduct an emergency site-wide evacuation or a cautionary phased release. An emergency situation might also warrant a shelter-in-place for specific buildings/zones instead of an evacuation due to a hazardous material release.

The following list provides a highlight of the zones and buildings at the laboratory and off-site. This includes their general purpose, a description of activities in the building, as well as any special hazards information. Berkeley Lab hosts six major national user facility that allow for collaboration with scientists from around the world to conduct joint research, run experiments, and analyze sample materials. The user facilities will also be outlined in this high-level description of activities and occupied facilities.

1.6.1 Zone 1

This area of the laboratory is the northwestern portion of the laboratory and is home to the following buildings:

Building 90 houses the Energy Technologies Area and the DOE-BSO, which has oversight for the operations of the laboratory and administers the contract awarded to University of California. Human Resources personnel also occupy this building.

Building 90X is the Facility for Low Experiments in Buildings (FLEXLAB), which has a series of test beds used for evaluating energy efficiency technologies in windows, heating, ventilation, and air conditioning, insulation and building materials. Additional studies conducted in the FLEXLAB include research for interaction with the smart grid.

Buildings 55 and 55A is occupied by the Life Sciences Department of Radiotracer Development and Imaging Technology and houses a positron emission tomograph (PET), a single photon emission and x-ray computed tomograph (SPECT/CT), and a nuclear magnetic resonance imaging (MRI) system. Research includes studies on heart disease, aging, neurodegenerative diseases, and cancer.

Building 56 is the Biomedical Isotope Facility and houses a mini-cyclotron used to produce short-lived radioactive isotopes used for imaging in biomedical research. This building has been noted as an EPHA facility for the laboratory.

Building 56A helps move technologies to the marketplace to benefit society and the U.S. economy through the Innovation Partnerships Office.

Building 64 is a laboratory and has administrative offices occupied by the Earth Sciences, Physical Biosciences, and Environmental Energy Technologies Divisions. The facility maintains a variety of geophysical and geoscience instrumentation and measurement equipment. Research includes climate science and the use of crystals for radiation detection, superconductors, and spintronic, components. This building also houses the Infrared Thermography Laboratory for research on thermal performance and insulation systems.

Building 71 houses LOASIS laser laboratories and the Berkeley Laboratory Laser Accelerator (BELLA) for conducting research on advancing the development of laser-driven plasma acceleration. This research has the potential to reduce cost, energy usage, and improve the environmental impact to accelerators. The Center for Beam Physics and the Environmental Energy Technology Division ventilation system laboratories are also located in this building.

Building 71A houses the Accelerator Technology and Applied Physics Division ion beam technology test stands and the development laboratory for the Advanced Light Source Gould group, which explores fundamental physics questions.

There are a series of 71 office trailers used for administrative functions. Protective Services Security personnel and Security Systems personnel are among the LBNL employees housed in these facilities.

Worthy of noting, Buildings 81 A, B, C, D (trailers) are also located in this area and store emergency equipment and supplies for large-scale and regional emergency events, such as food, water, first aid, blankets, toilets, tarps/tents, and equipment used for light search and rescue.

1.6.2 Zone 2

Zone 2 is the southwestern portion of the laboratory and is includes Blackberry Gate (Building 33B), the main entrance to the site. This gate is staffed with a UCPD Security Patrol Officer (SPO) and is open 24/7/365. Other buildings include:

Building 50 is home to personnel in the Physics Division and Nuclear Sciences Division, performing ground-breaking cosmology and neutrino astrophysics research.

Building 50A provides office space to the Laboratory Directorate, strategic and sustainability staff, Contractor Assurance and lab counsel, while other floors include laboratory space for the Computation Research Division, Engineering Division, and Center for Computation Research and Engineering. Research includes theoretical physics and electronics systems and integrated circuits test. The building is also home to IRENE, a scanning machine that applies methods derived from work on instrumentation for particle physics to the problem of audio reconstruction from mechanical recordings.

Building 50B is also home to Information Technology, Computational Research Division, and Computing Sciences staff where high-performance computing to accelerate research on clean energy, climate change, cosmology, and materials science is performed. In this building CDD chips used in telescopes and physics experiments worldwide, such as the Large Hadron Collider. Other key functions in this building include the Computational Cosmology Center and the Energy Sciences Network (ESnet). ESnet is of particular interest because it is provides the high-bandwidth, reliable connections that link scientists at national laboratories, universities and other research institutions, enabling them to collaborate on some of the world's most important scientific challenges including energy, climate science, and the origins of the universe. Funded by the DOE Office of Science, and managed and operated by the ESnet team at LBNL, ESnet provides scientists with access to unique DOE research facilities and computing resources.

Building 59, Computational Research and Theory (CRT) houses the National Energy Research Scientific Computing Center (NERSC) is the primary scientific computing facility for DOE Office of Science. As one of the largest facilities in the world devoted to providing computational resources and expertise for basic scientific research, NERSC is a world leader in accelerating scientific discovery through computation. More than 5,000 scientists use NERSC to perform basic scientific research across a wide range of disciplines, including climate modeling, research into new materials, simulations of the early universe, analysis of data from high energy physics experiments, investigations of protein structure, and a host of other scientific endeavors. Supercomputers Cori and Edison will be located in CRT.

Building 65A is the Site Access Office where laboratory personnel receive badges and parking permits, as well as safety training for new hires.

Building 65B houses the Human Resources Service Center and Employee and Labor Relations offices.

Building 70 is the primary lab space for the Energy Technologies Area where scientists study Batteries for Advanced Transportation Technologies (BATT), leading to cheaper and longer batteries for EVs. Other research in Building 70 focuses on atmospheric aerosol research, indoor air quality, cool roof material testing, laser ablation technology, and the development of cleaner and more efficient combustion materials. The building also is home to the Berkeley Nanogeosciences Center, seeking to uncover the roles played by nanosized particles in geotechnical processes. Work is also conducted here to refine Brookhaven's National Laboratory's Relativistic Heavy Ion Collider – STAR, which was is where the first head-on collisions between the nuclei of gold atoms occurred. Personnel residing in the building include the Nuclear Theory Group, Earth Sciences Division, and the Nuclear Sciences Division. This building does contain a Property Protection Area (PPA).

Building 70A is home to offices, clean rooms, and laboratory spaces devoted to a wide range of science, from understanding the role of microbes in the world to exploring fundamental chemical processes. It houses the Chemical Sciences Division's main office and the Glenn T. Seaborg Center, which focuses on understanding the fundamental heavy element chemical interactions in complex systems at a molecular level. Scientists from this center recently developed a promising treatment for safely decontaminating people exposed to radioactive actinides. Also residing in the building is several Earth Sciences Division groups, such as the Center for Isotopic Geochemistry, a joint LBNL and UC Berkeley center to measure the concentrations and isotopic compositions of elements in rocks, minerals, and fluids in the earth's crust, atmosphere, and oceans. In addition, the Ecology Department explores topics in environmental remediation, ecosystems biology, and microbial ecology. Building 70A also houses the LBNL MicroSystems Laboratory, which fabricates high performance CCD sensors. This laboratory made all the CCDs for the 500 Megapixel Dark Energy Survey Camera that will soon start taking data at the Blanco telescope in Chile. This building does contain a PPA.

Building 88 houses the 88-Inch Cyclotron, which can accelerate ions ranging from hydrogen to uranium. It is home to the Berkeley Gas-Filled Separator (BFS), one of the few places on the planet studying the physics and chemistry of super heavy elements and isotopes. The Berkeley Accelerator Space Effects (BASE) is also located in this building and is used by NASA to test electronics and materials for the space radiation environment. Lastly, this building includes the Accelerator and Fusion Research Division's Ion Beam Technology Laboratory.

1.6.3 Zone 3

Zone 3 is in the central portion of the laboratory east of Zones 1 and 2, butting up to the ridge near McMillan Road. Key structures in Zone 3 include:

Building 2 is a primary research building and identified as one of the facilities requiring an EPHA. The building houses the Chemical Sciences Division where x-ray science is studied and high-powered laser systems are used to create new sources of ultrafast femtosecond and attosecond x-rays. Material Science Division's Center for X-Ray Optics (CXRO), a world leader for soft x-ray imaging, CXRO boosts the nanowriter An ultra-high-resolution electron-beam lithography machine etches using a narrow energized beam of electrons to generate energies up to 100,000 volts with diameter of only 2.5 to 5 nanometers (smaller than the diameter of a human hair by ten thousand times). Scientists also use Building 2 to study exotic quantum phenomena in materials and materials for advanced electronics. This building does have hazardous materials that reach the threshold for an EPHA.

Building 6 is the Advanced Light Source (ALS) is funded by the DOE, Office of Basic Energy Sciences, and hosted more than 2,200 visitors in FY2013 from the national and international scientific, industrial, and educational communities, as well as from government agencies in the United States and abroad. The ALS produces light in the x-ray region of the electromagnetic spectrum that is one billion times brighter than the sun. This extraordinary tool offers unprecedented opportunities for state-of-the-art research in materials science, biology, chemistry, physics, and the environmental sciences. This building does have hazardous materials that reach the threshold for an EPHA.

Building 7 is home to LBNL's Workforce Development and Education Office, which provides a rich variety of educational opportunities to Bay Area youth. The group also operates internship programs and provides support services for ALS.

Building 15 is a three-story building that houses user-support operations for ALS housing lab space for researchers, experiment assembly areas, and the Accelerator Physics group.

Building 23 is the Berkeley Lab Guest House and features 57 guest rooms. The Guest House is considered a public place where LBNL or UC-hosted persons (not performing any lab-related work activities) may stay. Pacifica Plaza Hotels, Inc., is the Operations and Management contractor under the purview of the UC.

Building 26 houses the Health Services group, among other EHS Ergo and Industrial Hygiene staff. Occupational health professionals are available Monday through Friday 8 a.m. to 5 p.m. and can evaluate injuries, render first aid, and refer employees to a physician for further care.

Building 30 is the Solar Energy Research Center (SERC) and houses laboratories and offices devoted to photovoltaic and electro-chemical solar energy systems designed to improve transportation fuels. Joint Center for Artificial Photosynthesis (JCAP). This is the nation's largest research program dedicated to the development of an artificial solar-fuel generation technology. Established in 2010 as a DOE Energy Innovation Hub, JCAP aims to find a cost-effective method to produce fuels using only sunlight, water, and carbon dioxide as inputs. The Kavli Energy Nanosciences Institute (Kavli ENSI) research program is also housed in SERC.

Building 33 is a three-story building and home to the General Purpose Laboratory (GPL) for researchers from the Physical Biosciences, Life Sciences, JCESR, and JCAP programs.

Building 45 is adjacent to the building that houses Protective Services and ACFD. This building has fire apparatus, emergency response vehicles, and emergency response equipment.

Building 46 is a multi-purpose structure housing offices and machine shops for engineers that design and build advanced equipment for the Accelerator Technology and Applied Physics and ALS Divisions. There are also offices for Engineering Division, Environmental Energy and Technologies Division, and Accelerator Technology and Applied Physics Division staff.

Building 46B provides office space for the Advanced Technologies Group and Engineering Division. The group provides electronics and software solutions for scientists around the world, starting from particle accelerators and covering a wide range of expertise such as controls, power electronics, laser systems, data acquisition, and high-performance computing.

Building 47 is adjacent to Building 46 and provides office space for the Accelerator and Fusions Research Division.

Building 48 is home to ACFD and Protective Services. This building also houses the Laboratory Operations Center (LOC).

Building 54 is the Bay View Cafeteria, which provides breakfast and lunch Monday through Friday for laboratory employees. There is also a small library and conference hall in addition to the cafeteria and dining hall. The cafeteria is operated by a sub-contractor, Epicurean.

Building 58 is the Heavy Ion Fusion program and the Superconducting Magnet Test Facility, which designs and evaluates powerful magnets used by the world's largest accelerators such as the Large Hadron Collider at CERN in Geneva, Switzerland. This building also houses machine and electronics shops that support Accelerator and Fusion Research Division programs.

Building 80 is a support facility for ALS.

1.6.4 Zone 4

Zone 4 is the east-central portion of the lab and home to Grizzly Gate. The gate is staffed with a UCPD SPO Monday through Friday from 6 a.m. until 9:30 a.m. for entry to the laboratory. Exit can be achieved at all hours through an automatic gate.

Building 69 is the Shipping and Receiving Facility and central mailing and parcel distribution service for picking up, sorting, and delivering the lab's USPS mail, international mail, and interoffice mail. Mail services are available 7 a.m. to 4:30 p.m. This building also houses the IT lab business system developers, as well as IT records and archives.

Building 75 provides workspace for the EHS Radiation Protection Group, which provides safety-related technical assistance to the lab community to ensure that all work is performed safety, efficiently, and in compliance with applicable regulations and guidelines. Portions of the Waste Management group are also housed in this building.

Building 75A is a PPA and used by the EHS Division for testing and storage.

Building 75B is south of Building 75 and houses the Environmental Services group.

Building 76 houses Facilities Division personnel that provide engineering, construction, and maintenance of more than 2 million square feet of office and laboratory space at LBNL's hilltop campus. The site's EOC is also located in Building 76.

Building 78 is staffed with EHS personnel and Occupational Safety personnel and houses the laboratory's ergonomic lab.

Building 77 is staffed with Engineering Division personnel and houses the precision machinery needed to make parts for experiments conducted at LBNL and elsewhere. The products range from superconducting magnets for particle accelerators to customized widgets for chemistry labs. Cavernous rooms served by massive bridge cranes include a sheet metal shop, a welding shop, metalworking lathes, milling machines, ceramic fabrication, a sandblasting facility, a paint shop, and a Class 1000 cleanroom. The building also houses an epoxy chamber and ovens used to building super conducting magnets. Building 77 is surrounded by several 77 series storage containers.

1.6.5 Zone 5

Zone 5 is in the south-central portion of the laboratory south of Zone 4 and east of Zone 3 and houses the emergency response support trailer.

Building 31, the Chicken Creek Building, stores various Facilities Division workshops and storage areas.

Building 62 is filled with Materials Sciences Division and Environmental Energy Technologies Division staff. The building has a strong focus on battery and energy storage research, as well as electronic materials and thermoelectrics. Building 62 is surrounded by several small 62 series storage containers.

Building 66 is home to the Materials Sciences Division and Physical Biosciences Division laboratories and administrative offices. It includes laboratory space for research into promising materials such as Metal Organic Frameworks and metamaterials. Such materials could lead to new clean energy technologies, among other applications. Many of the building's labs are designed for ultra-low vibration and low acoustic noise for optimal use of sensitive instruments.

Building 67 is the Molecular Foundry housing six floors of laboratories with a focus on nanotechnology, the science of very small. This facility is a user facility and attracts scientists from around the world advancing research in energy, computing, among others. The knowledge-based LBNL user facility provides communities of outside researchers with access to expert staff and state-of-the-art instrumentation to advance forefront research in the synthesis, characterization and theory of nanostructured materials, thereby understanding and controlling matter at the nanoscale. Through a competitive peer-reviewed proposal process, users come from academic, industrial or national laboratories, both domestic and international, to conduct novel research at no cost for non-proprietary projects. This building has hazardous materials that reach the threshold for additional planning through an EPHA.

Building 72 is home to the National Center for Electron Micrscopy (NCEM) and is adjacent from Building 67. This is an SC user facility operated for the DOE by LBNL and is one of the world's foremost centers for electron microscopy and micro-characterization. As a national user facility, NCEM is open to scientists from universities, government and industrial laboratories, and provides cutting-edge instrumentation, techniques and expertise for advanced electron beam micro-characterization of materials at high spatial resolution. NCEM's purpose is to conduct fundamental research relating microstructural and micro-chemical characteristics to materials properties and processing parameters; to develop advanced electron microscopy techniques, computer algorithms and instrumentation; and to help educate future scientists in the theory and application of electron optical micro-characterization.

1.6.6 Zone 6

This area of the laboratory is in the southeastern portion of the laboratory with an ingress/egress point at Strawberry Gate. Strawberry Gate is open Monday through Friday 5 a.m. to 8 p.m. and is the primary entry point for mutual aid emergency response from the City of Berkeley.

Building 74 provides office and lab space for the Earth Sciences Division allowing research on new energy resources, cleaning up the environment, and the study of climate change. Scientists conduct fundamental research in hydrogeology and reservoir engineering, geophysics and geomechanics, geochemistry, and microbial ecology. Additionally, scientists can investigate these phenomena from the nanoscale to the field scale.

Building 83 is a Life Sciences Division laboratory for research focusing on the structures of proteins, protein complexes, and other sub-cellular assemblies in the context of human disease, including cancer and neurodegenerative disease, fundamental cell biology, and microbiology.

Building 84 provides off and lab space for the Genomics Division, Earth Sciences Division, and Life Sciences Division. The secrets of life are deciphered here due to the pursuit of better understanding the complex sequence motifs that control RNA transcription, DNA replication, and chromosome structure.

Additionally, the future of the planet is becoming a focus of research in this area with the Earth Science Division's Climate Sciences Department, where new modeling is being created, pioneering work on the carbon cycle used by other scientific laboratories to predict the climate and interactions within it.

Building 85 is the Hazardous Waste Handling Facility, which provides a range of waste management services for the laboratory. The goals for EHS staff that operate this facility is waste minimization and waste management that complies with the various federal and state requirements. This is one of the buildings requiring an EPHA, as well as several of the 85 series waste containers around the main building.

Building 86 is a multi-divisional biosciences research facility.

1.6.7 Zone 7

In addition to the main site, LBNL includes associated research facilities located on the UCB Campus and leased off-site facilities in the surrounding communities of Berkeley, Emeryville, Oakland, and Walnut Creek. These buildings implement protective actions based on events occurring in the area and report incidents and emergencies to extension 6999 as soon as possible.

1.6.7.1 Potter Street

Building 977 is home to the Life Sciences Division at 717 Potter Street, Berkeley, CA. This facility contributes to strategic LBNL programs and national efforts to address scientific questions and provide solutions in the areas of cancer, DNA damage and repair, radiation biology, genome structure and function, neurodegenerative diseases, structural biology, bio-fuel production and bioremediation. Although the Division Administration and the majority of Life Sciences laboratories are located at 717 Potter Street, there are several laboratories located on the LBNL main site and at the Donner Lab.

1.6.7.2 Donner Laboratory

Donner Laboratory (Building 1), near the intersection of Hearst Avenue and Gayley Road (northeast corner of the UCB Campus), houses laboratories and office space devoted to structural biology, lipoprotein research, bioenergy, and electron microscopy instrument development. Built in 1942, Donner Lab was the world's first center for research on the use of atomic energy in biology and medicine, and is considered the birthplace of nuclear medicine. Donner is owned and operated by the UC and is not owned by DOE.

1.6.7.3 Biosciences

Energy Biosciences Institute, 2151 Berkeley Way, Berkeley, CA (Building 955), located on the UCB Campus, is the largest public-private partnership (UCB, University of Illinois, LBNL, and BP) of its kind in the world and was created to apply advanced biological knowledge to the area of bioenergy development.

1.6.7.4 JBEI/ABPDU

Building 978 is the Joint Bio-Energy Institute (JBEI) and Advanced Biofuels Process Demonstration Unit (ABPDU) is located at 5885 Hollis Street, Emeryville, CA. LBNL utilizes the third and fourth floor of this building as one of three DOE Bioenergy Research Centers (BRCs) established by the DOE's Office of Science in 2007 on the basis of a nationwide competition to accelerate fundamental research breakthroughs for the development of advanced, next-generation biofuels. This building also houses the ABPDU, a state-of-the-art, 15,000 square foot facility for testing and developing emerging biofuels technologies in a process demonstration production environment. The ABPDU is available to Bioenergy Research Centers, DOE-supported researchers, academic institutes, non-profit research organizations, and companies involved in biofuels research and development (R&D) production.

1.6.7.5 OCFO

Office of the Chief Financial Officer (OCFO) (Building 971) is located in Emeryville, CA, at 6401 Hollis Street, Suite 175. This building houses the OCFO directorate comprised of several functional departments, including Budget Office, Business Systems Analysis, Conference Services, Controller's Office, Field Operations Management, and Procurement and Property. Emergency response is provided to this facility through

1.6.7.6 JGI

The DOE Joint Genome Institute (JGI) is located in Contra Costa County of Walnut Creek, CA, 2800 Mitchell Drive. This building (Buildings 100, 310, 400, and 500) is devoted to advance genomics in support of DOE missions related to clean energy generation and environmental characterization and cleanup. JGI is operated by the UC and provides integrated high-throughput sequencing and computational analysis that enable systems-based scientific approaches to these challenges. The DOE JGI is supported by the DOE Office of Science (SC) and unites the expertise at LBNL, Lawrence Livermore National Laboratory, and the Hudson Alpha Institute for Biotechnology. Emergency responders for this facility are Contra Costa County Fire Department and Walnut Creek Police Department.

1.6.7.7 Oakland Scientific Facility

OSF or Building 943 is located at 415 20th Street, Oakland, CA. Although no LBNL employees reside in this building, it provides office space to University of California Office of the President (UCOP). LBNL assets that remain in this facility include supercomputers Hopper and Carver, which are expected to retire from this location by 2016. Emergency response for this facility is provided through a 24/7/365 UCPD SPO, as well as City of Oakland Police Department and Oakland Fire Department.

1.6.7.8 Systems Biology Knowledgebase

Building 972, located at 5858 Horton Street, Emeryville, CA, is the DOE Systems Biology Knowledgebase (KBase). This is a new community resource for predictive biology that integrates a wide spectrum of data types across the microbial, microbial community, and plant domains. These data are tied into a varied set of powerful computational tools that can analyze and simulate data to predict biological behavior, generate and test hypotheses, design new biological functions, and propose new experiments.

1.7 Co-located Facilities

Most operations and facilities at LBNL are associated with the BSO and the site's management and operating (M&O) Contractor. However, there are other organizations that conduct operations/activities within the boundaries of the Laboratory that are either leased facilities or co-located. DOE O 151.1C requires that leased facilities be integrated into the site-wide Emergency Management Program.

1.7.7 Guest House

Building 23 is the Berkeley Lab Guest House and features 57 guest rooms. The Guest House is considered a public place where LBNL or UC-hosted persons (not performing any lab-related work activities) may stay. Pacifica Plaza Hotels, Inc., is the Operations and Management contractor under the purview of the UC.

1.8 Contractors

LBNL is owned by the DOE and is a Federally-Funded Research and Development Center (FFRDC) established in accordance with the Federal Acquisition Regulation (FAR) Part 35 and operated under a M&O contract, as defined in FAR 17.6 and DEAR 917.6. The DOE has contracted with University of California for the DOE SC and operates under Prime Contract # DE-AC02-05CH11231.

The objective of the contract is to develop and implement innovative approaches and adopt practices that foster continuous improvement in accomplishing the mission through effective and efficient management structures, systems, and operations that maintain high levels of quality and safety in accomplishing the work required. The M&O Contractor shall conduct all work in a manner that optimizes productivity, minimizes waste, and fully complies with all applicable laws, regulations, and terms and conditions of the contract.

2. TECHNICAL PLANNING BASIS

The Technical Planning Basis (TPB) consists of an Operational Emergency Base Program and provides the framework for response to serious events involving health and safety, the environment, safeguards, and security. Elements of the TPB include an EPHS at a minimum. The EPHS identifies what concerns (potential events and conditions and the impacts of such emergencies) need to be addressed.

LBNL has facilities with significant quantities of hazardous materials that require evaluation for the potential to generate a “classifiable emergency.” Classifiable emergencies occur when hazardous materials are released and cause a serious airborne health hazard at or beyond 30 meters from the point of release and affect the employees and potentially the public. The identification of these materials expands the Operational Emergency Base Program into an Operational Emergency Hazardous Materials Program and requires development of an EPHA, Emergency Action Levels (EALs), and identification of an EPZ. The EPHAs support rapid event recognition, categorization, and classification so that prompt mitigating actions can be taken to reduce or eliminate consequences to certain hazardous materials that exceed defined threshold limits and are present in facilities and operations.

The site EPZ is the geographic area surrounding the site within which special planning and preparedness activities are recommended to reduce the potential health and safety impacts from an event involving hazardous materials. The EPHA also determines the EPZ by developing the maximum consequence distances. The EPZ will be developed for LBNL in 2016 once the EPHAs are completed. Estimates at this time result in about a one-mile EPZ.

Emergency Action Levels (EALs) are a set of decision criteria with pre-approved decisions and actions that address generic types of emergency conditions and aid in identifying, categorizing, and classifying the emergency event, directing on-site protective actions, and recommending protective actions to off-site agencies and jurisdictions within the EPZ. Protective actions are outlined in EM-PLAN-009 and are predetermined and communicated to reduce or minimize the impact to on-site personnel and public health in the event of an Operational Emergency.

The Technical Planning Basis provides the foundation for the Emergency Management Program by identifying and analyzing the hazards and determining the resources necessary for mitigation and response to Operational Emergencies. For more information on the Technical Planning Basis, reference EM-PLAN-005.

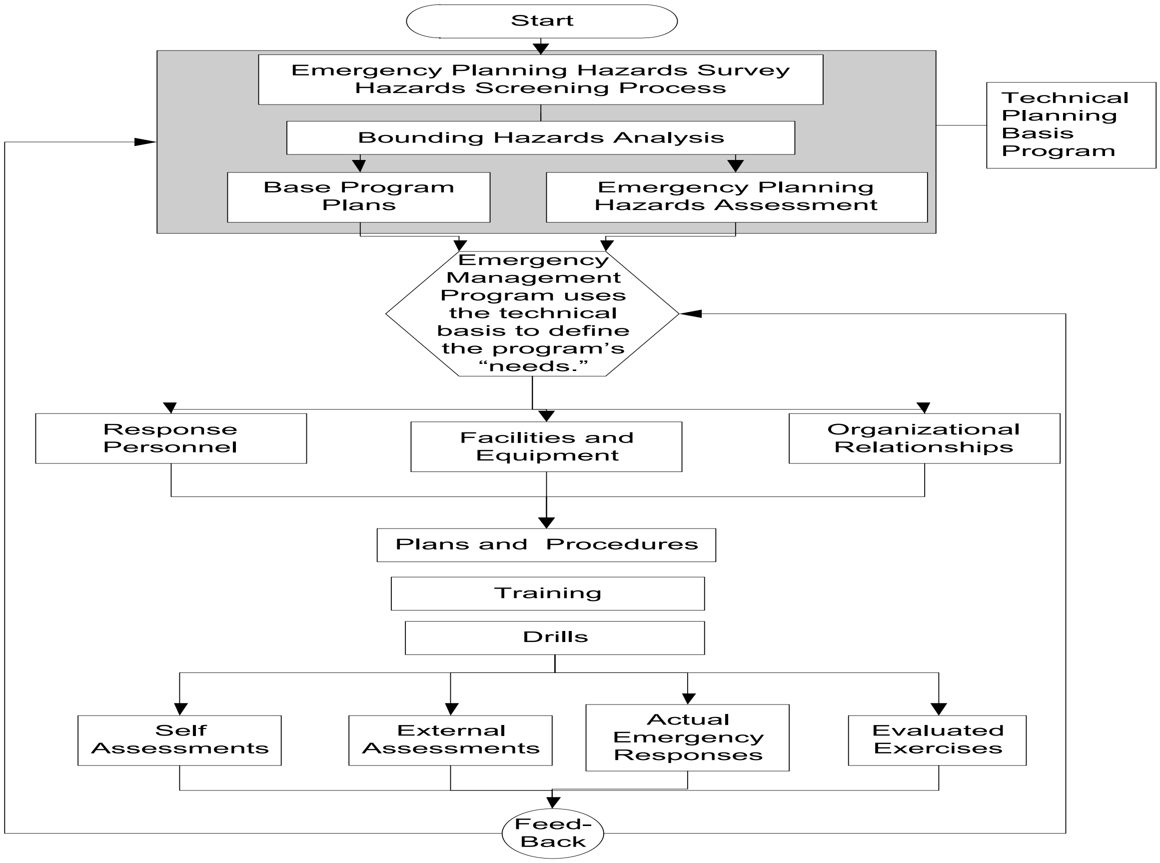


Figure 2 – Technical Planning Basis Program

2.1 Emergency Planning Hazards Survey

An EPHS is "a qualitative examination of the features and characteristics of the facility or activity to identify the generic emergency events and conditions (including natural phenomena such as earthquakes and tornadoes; wild land fires; and other serious events involving or affecting health and safety, the environment, safeguards, and security at the facility) and the potential impacts of such emergencies" [DOE O 151.1C CRD 2.a.]. The EPHS process used by LBNL is defined in EM-PLAN-005, which is approved by senior management and provided to DOE-BSO.

The EPHS also examines LBNL facilities and processes to identify non-excluded hazardous materials, including biological, chemical, and radiological substances [DOE O 151.1C, CRD 2.a.(2) and 2.a.(3)]. EM-PLAN-005 establishes the process and methodology for the identification and qualitative assessment of the facility/site-specific hazards [DOE O 151.1C, CRD 2.a.(1)(d)].

The screening thresholds applied in the qualitative hazards screening process are based primarily on DOE O 151.1C and accompanying guidance and assure the methodology meets or exceeds the requirements. The EPHS examines all facilities, events, and materials at the laboratory for their potential to cause an Operational Emergency. Materials are screened through a review of the Chemical Management System (CMS), ShoeBox, and RADAR hazardous material inventory systems. The material inventories provide the EPHS screening information for facilities involved in producing, processing, handling, storing, or transporting hazardous materials that have the potential to pose a serious threat to people, the site or the environment. PS-EM personnel supplement the inventories in these systems with annual facility walk-throughs so that each facility is reviewed at least every three years.

The EPHS is specific to emergency management hazards identification efforts that review occupational safety and health hazards. Typically, these hazards do not have the potential to generate conditions that would meet the definition of an Operational Emergency. The EPHS is potentially the most important document in the TPB process because it determines whether or not a specific hazard is further analyzed and if plans are needed for the remaining emergency planning and preparedness process. It is important to note that the EPHS does not attempt to quantify event probability or identify specific scenarios of event causation.

Combining the generic emergency events (e.g., natural phenomenon) with the potential technical hazards the EPHS identifies emergency planning requirements for emergencies. Although it can serve other purposes, several of the leading uses of the EPHS include:

- Direct, focus and budget emergency planning resources:
  - By identifying potentially dangerous location/quantity/material combinations of hazardous materials.
  - By identifying processes, facilities, etc., that needs special planning for emergencies.
  - Providing facility-specific information to emergency responders during an emergency.
  - Recording the process of deciding what to include in more detailed analyses such as (the quantitative analysis) Bounding Hazards Analysis (BHA) and the quantitative analysis in an EPHA.

2.1.1 Hazards Screening Process

The screening process further analyzes specific hazardous materials and quantities that, if released, could produce impacts consistent with an Operational Emergency. The DOE defines(hazardous materials as radioactive, chemical, biological agents and toxins that have the potential to pose a serious airborne health threat to workers, the public and the environment, almost all of which are present at LBNL on-site and off-site facilities [DOE O 151.1C, CRD 2.b.(2)(a)1 and 3.a.(1)].

DOE O 151.1C allows the use of a screening process to reduce the number of hazardous materials quantitatively analyzed for emergency planning purposes. The use of a screening process focuses emergency management resources on analyzing materials that, because of their quantity, toxicity, and dispersibility, have the potential to harm workers or the public. Hazardous material screening serves the purpose of allocating emergency planning resources to hazardous material, location, quantity combinations above a certain threshold. If the screening process identifies at least one hazardous material that requires further analysis, the facility requires a quantitative analysis of its hazardous materials in an EPHA [DOE O 151.1C, CRD 3.b.(1)(e)].

2.2 Bounding Hazards Analysis

The Bounding Hazards Analysis (BHA) is a step employed between the EPHS, and a comprehensive EPHA. The BHA is a quantitative tool used to further exclude hazardous materials based upon: specific storage conditions, constituent chemical toxicological information, material properties, and/or a bounding model run to determine the hazardous materials propensity to generate a classifiable Operational Emergency. If the hazardous material can be shown to fit this criteria, the results are documented and comprehensive analysis in an EPHA is undertaken. If the hazardous material does not meet these properties, the analysis of the hazardous material is only documented in the BHA.

2.3 Emergency Planning Hazards Assessment

The EPHA serves three primary functions for the Emergency Management Program. First, by summarizing the hazardous materials, systems, and processes, and the nature and magnitude, the EPHA provides the Technical Planning Basis for determining the necessary plans/procedures, personnel, resources, equipment, and analyses that comprise the Operational Emergency Hazardous Material Program [DOE O 151.1C, CRD 3.b.(1)(a), 3.c.(1-2) and 10.b.(3)]. Second, the documented EPHA provides an archival record of the data, assumptions, and methods used in developing the technical planning basis for the program; it also reflects the reasoning used to modify the program in response to changes in operations and hazards. Third, the EPHA represents the technical foundation for developing a program that is commensurate with hazards so that proper planning and categorization/classification can be accomplished.

For those hazardous materials that do not meet the exclusion criteria of the hazards screening process and that are not included in the BHA, further analysis is conducted and documented in an EPHA [DOE O 151.1C, CRD 2.b]. The EPHAs are the Technical Planning Basis for emergency response planning and identify the consequences of hazards that have been identified to have the potential to result in a classifiable Operational Emergency being declared, should the hazard be involved in an uncontrolled release. The process for completing an EPHA involves data gathering, hazard analysis, dispersion modeling, scenario evaluation, Emergency Action Level (EAL) development, and protective action planning. The EPHA process includes the following:

- Characterization of each facility.
- Characterization of each facility's hazardous materials.
- Analyses of potential accidents or events and evaluation of potential consequences.
- Determination of the site's EPZ [DOE O 151.1C, CRD 3.b.(1)(e)].
- Provision of the basis for EALs and protective actions.

The EPHA does not include analysis of commercial hazardous material shipments because transportation of hazardous materials complies with applicable Department of Transportation (DOT) regulations and specifications for such shipments [DOE O 151.1C, CRD 3.b.(1)(f) and (g)]. For more information on the EPHA process, refer to EM-PLAN-013.

As mentioned, monitoring of existing hazardous material tracking systems assist with the maintenance of the EPHS and EPHA documents, as well as facilities walk downs conducted on an annual basis [DOE O 151.1C, CRD 3.b.(1)(c)]. Additionally, Procurement flags certain purchase requests for hazardous chemicals and forwards this information to the PS-EM group for inclusion into the EPHS. PS-EM works with division personnel, typically the Division Safety Coordinators, to reduce or substitute these chemicals if possible. Division personnel are encouraged to report significant changes (i.e., increases) to their facilities or hazardous materials inventories to PS-EM prior to changing inventories or implementing those activities. The EPHAs are reviewed at least every three years and updated prior to increases to the site/facility or hazardous materials inventory with respect to materials fitting the hazard properties outlined by DOE O 151.1C [DOE O 151.1C, CRD 3.b.(1)(d)]. Changes that result in a reduction of hazards with no adverse effect on safety or emergency preparedness or response may be addressed in the next scheduled EPHA review and update [DOE O 151.1C, CRD 3.b.(1)(d)].

Overall protection of on-site workers and the public is ensured, during an emergency, involving or affecting on-site and off-site facilities, as well as hazardous facilities through the integration of operations/activities into a site-wide CEMP. For a listing of EPHA facilities, reference EM-RPRT-001 and EM-TABL-006.

2.4 Physical Attributes of the Site

LBNL is in the State of California, Alameda County, situated between Tilden Regional Park, the City of Berkeley, and the City of Oakland. The main site is located about three miles east of San Francisco Bay on land owned by UC. The main site is situated on the ridges and in the draws of Blackberry and Strawberry Canyons in the East Bay Hills on approximately 200 acres of land east of the UC Berkeley campus. While LBNL also leases off-site facilities elsewhere in Berkeley, Emeryville, Oakland, and Walnut Creek (see Appendix C), this section focuses on LBNL's main site.

Adjacent land use consists of residential, institutional, and recreational areas. The area to the south and east is UC land that is maintained largely in a natural or undeveloped state, and includes UC Berkeley's Strawberry Canyon Recreational Area and Botanical Garden. To the northeast are the UC's Lawrence Hall of Science, Space Sciences Laboratory, and Mathematical Sciences Research Institute. LBNL is bordered to the northwest by a residential neighborhood of low-density, single-family homes, and on the west by the UC Berkeley campus multi-unit dwellings, student residence halls, and private homes; the area to the west is highly urbanized.

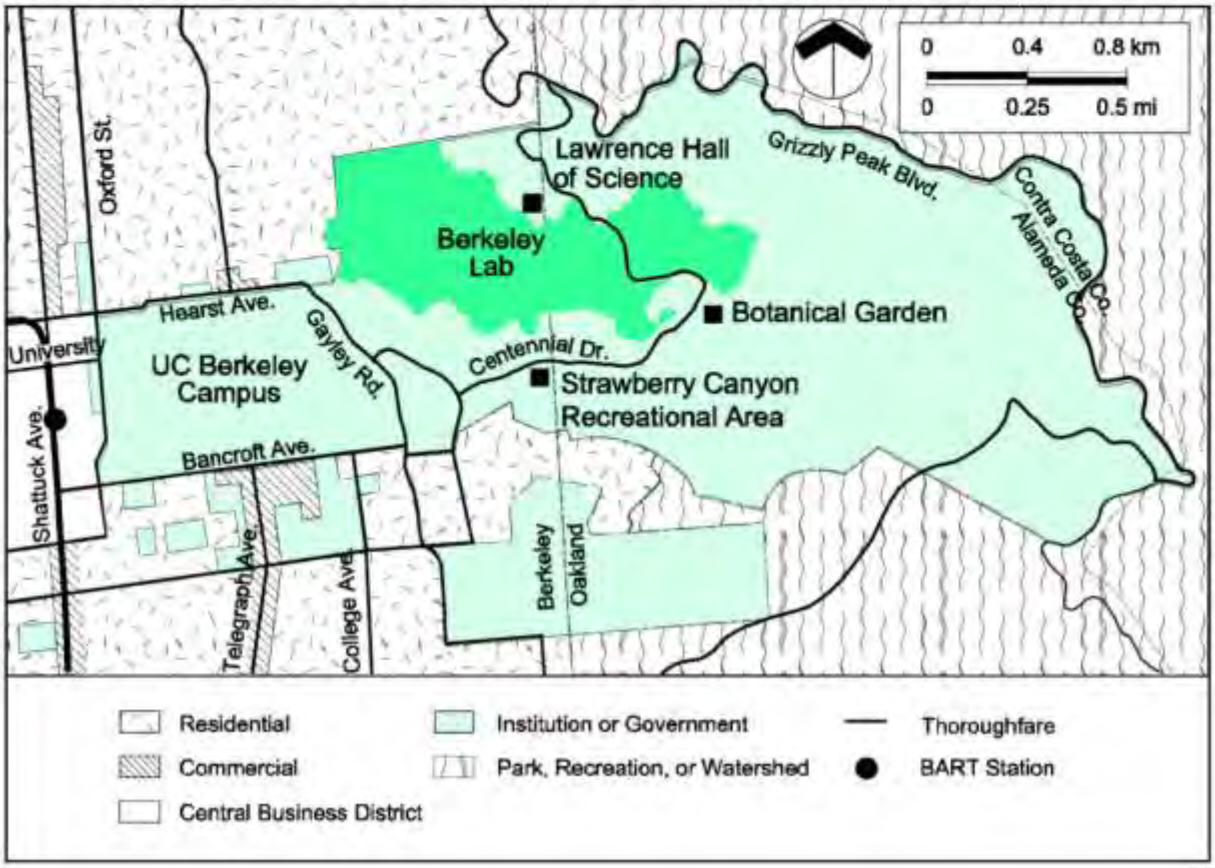


Figure 3 – Adjacent Land Use

2.4.1 Geography

The principal recreational area that borders the main LBNL site is Tilden Regional Park, to the north. This area is used for hiking, biking, fishing, swimming, and horseback riding. The other major areas of use surrounding the area is the City of Berkeley and the City of Oakland. The area of the city closest to the main LBNL site consists of residential and small businesses, as well as the University of California-Berkeley campus. The City of Berkeley has an estimated population of 113,000 and the City of Oakland (to the south) is estimated to be about 391,000.

LBNL's elevation ranges from 135 to 350 meters (m) (450 to 1,150 feet [ft]) above sea level. This steeply graded topography precludes any flooding risk for LBNL, though it does present additional hazards. There are several small creeks that run through the site and provided drainage for any rainfall that does occur. These creeks include: North Fork of the Strawberry Creek, Cafeteria Creek, Ravine Creek, Ten-Inch Creek, Chicken Creek, No Name Creek, Winter Creek, and Botanical Garden Creek.

The laboratory sits on an active fault line, the Hayward, which is a branch of the San Andreas Fault System. The Hayward Fault runs from northwest to southeast along the base of the hills at the western boundary of the laboratory. The inactive Wildcat Fault traverses the site from north to south along the canyon at LBNL's eastern edge.

Seismologists warn that the next Hayward Fault earthquake – inevitable anytime now – could affect more than five million people. The projected earthquake (expected to be in the magnitude 7 range) could potentially cause property losses of at least $165 billion and total economic losses exceeding $1.5 trillion.

This assessment was recently reinforced by the August 24, 2014, earthquake with its epicenter six miles southwest of Napa, California (approximately 35 miles from LBNL). The 6.0 magnitude earthquake caused millions of dollars of damage and injured over 100 people; but no deaths were reported as a direct result of the quake. Within 36 hours of the earthquake, the area had experienced over 50 aftershocks greater than magnitude 1, with the largest at a magnitude 3.6.

2.4.2 Topography and Geology

The terrain of the site is gently rolling with hills and is partially wooded. The laboratory is on the side of Berkeley Hills with Tilden Regional Park at the top and backside of the hills. There is a creek on site, Chicken Creek, which runs from the site in a southwesterly direction that drains into Strawberry Creek.

LBNL is located at 748 feet elevation east of the San Francisco Bay of the Pacific Ocean. The lab is not subject to major flooding given its location, but landslides can result from heavy rains.

2.4.3 Population Distribution

The western area around the laboratory is the City of Berkeley, which has a population of 116,768 (based on 2013 census) and to the east is the City of Oakland with a population of 406,253. Due north of the laboratory is Tilden Regional Park, operated by East Bay Region of Alameda and Contra Costa County. The park occupies 2,079 acres and is approximately one half mile north of the laboratory. The park is open year round.

2.4.4 Meteorology

The climate is temperate, influenced by the moderating effects of nearby San Francisco Bay and the Pacific Ocean to the west, and by the East Bay hills to the east. These physical barriers contribute significantly to the relatively warm, wet winters and cool, dry summers. The average annual temperature at the site is 55° Fahrenheit (F), with temperatures ranging from 41° to 68°F nearly 90% of the year. Only seldom does the maximum temperature exceed 90°F or the minimum temperature drop below 32°F. The average annual precipitation, based on 40 years of on-site measuring records, is almost 30.5 inches. In 2013, due to the extraordinary drought affecting the entire state, the total rainfall amount was 7.35 inches, or approximately 25% of the annual average. Measurable snow does not fall at Berkeley Lab.

On-site wind patterns change little from one year to the next. Figure 1 is a graphical summary – or "wind rose" – illustrating the frequency of the year's predominant wind patterns. The most prevalent wind pattern occurs during fair weather, with daytime westerly winds blowing off the bay, followed by lighter nighttime southeasterly drainage winds blowing off the East Bay hills. The other predominant wind pattern is associated with stormy weather in which south-to-southeast winds blow in advance of each system and are followed by a shift to west or northwest winds after its passage.

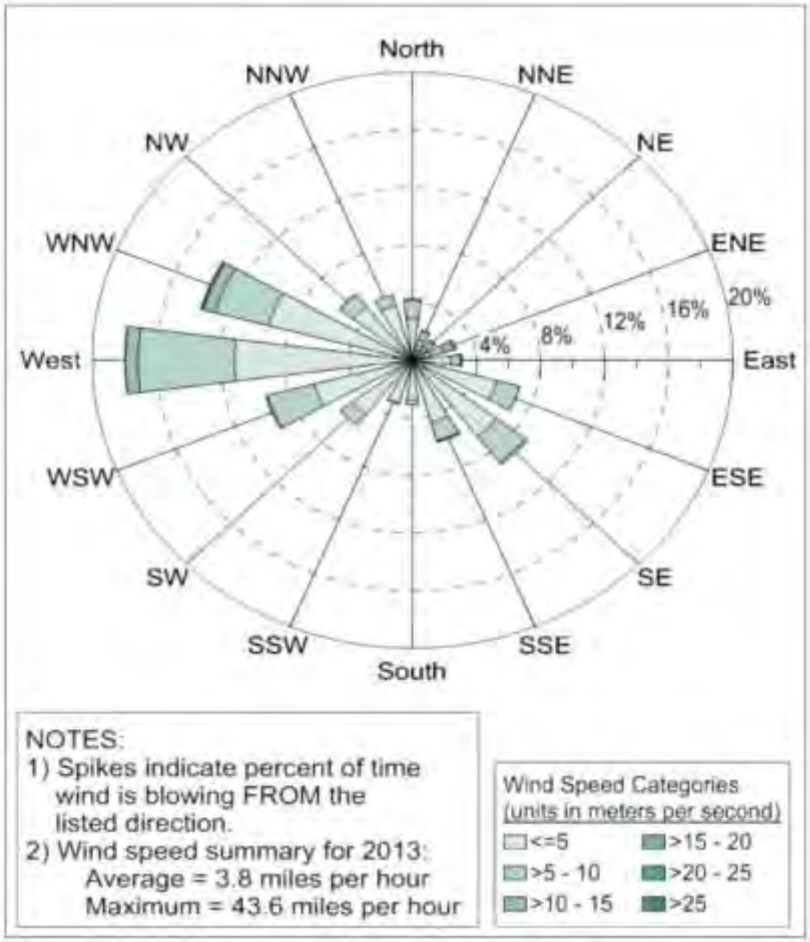


Figure 3 – Annual Wind Patterns

Weather data was taken at ten meters using the LBNL meteorological station from the LBNL Site Environmental Report.

2.4.5 Natural Phenomena

A natural phenomena hazard is an act of nature (i.e., high winds, seismic event, flood, precipitation, lightning strike, or extreme cold or heat) that may pose a threat to workers, the public, or the environment by having the potential to cause damage to systems, structures, or components. There are also certain types of natural phenomenon events, such as meteor strikes, that can be very destructive, but represent no real threat to populations due to the extreme improbability of occurrence.

LBNL is affected directly by earthquakes, but not tsunamis, hurricanes, or waterspouts. According to www.usa.com, the Berkeley area has experienced approximately 59 earthquakes since 1950 that were stronger than a 4.0. In 2014, Napa experienced a 6.0 earthquake and the City of Fremont experienced a 4.0 in 2015.

While earthquakes represent the greatest danger to LBNL, the laboratory has also experienced thunderstorms, lightning, hail, extreme heat, drought, high winds, wild land fire, landslides, and flooding. The National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, Storm Event database records indicate that floods and strong winds are the most common for this area.

PS-EM personnel monitor the National Weather Service (NWS) and provides warnings and protective action announcements for severe weather that has the potential to affect the laboratory and personnel.

Although not recognized as a severe event for Berkeley with NOAA or the NWS, the laboratory has experienced landslides, typically after heavy rains. Landslides have occurred in Zones 3 and 5 of the laboratory and are analyzed in the EPHS.

2.4.6 Transportation System

The transit and transportation sector are considered a key critical infrastructure. All other emergency response depends on the availability of functional roads and transportation assets. Police, fire and emergency medical services (EMS) vehicles can only reach disaster victims if passable and safe roads have been inspected and cleared of debris by the transportation agency personnel. Rescue and relief goods can only be delivered to the disaster site if roads, railroads and ports can recover functionality rapidly. The ability to respond to disasters effectively is based on identifying transit and transportation mechanisms and conducting situational awareness during regional events for this critical infrastructure.

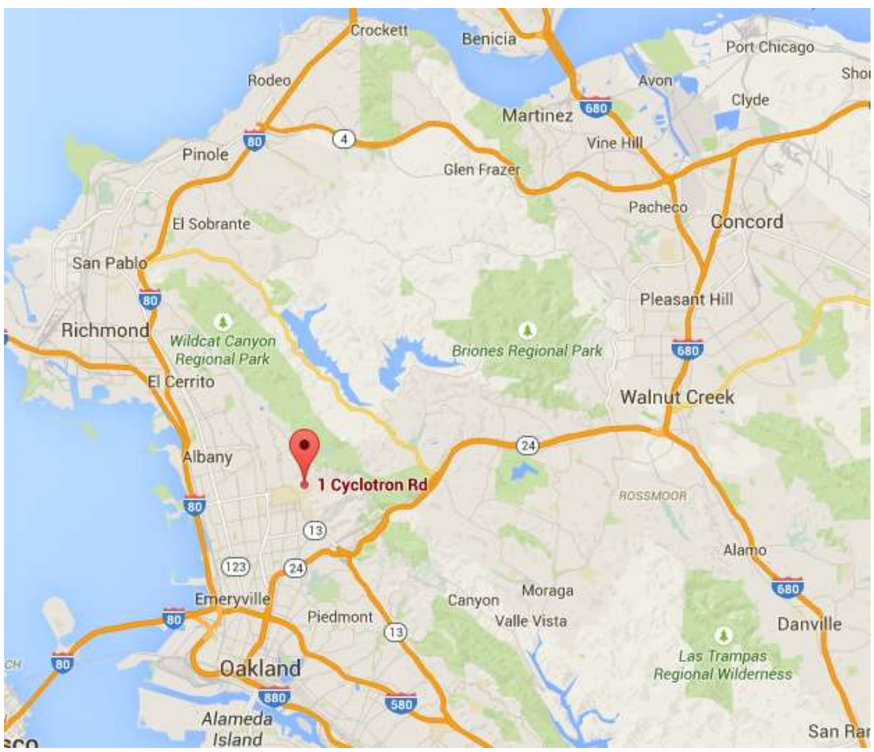


Figure 4 – Transportation Arteries

A number of laboratory employees use public means for transportation to the laboratory. There are a number of buses, intercity rails, as well as the San Francisco Bay Ferry that are used throughout the region. More common to the laboratory, employees use the Bay Area Rapid Transit (BART), which provides regional rail service into Berkeley. The laboratory has shuttle buses that transport from the UC campus, Cities of Berkeley and Emeryville to the laboratory starting at 6:30 a.m. through 9:30 p.m. Monday through Friday. While most people use personal vehicles, there are a number of lab employees that carpool, bike, or walk to the lab.

The variety and complexity of transportation poses significant challenges to Emergency Management for evacuation planning. This is further complicated with the position of the laboratory (i.e., hill side with surrounding forest terrain) with three narrow entry/exit points, which might be impacted during an emergency. For more information on evacuations, please refer to EM-PLAN-010.

2.4.7 Utility Systems

Primary utility systems for the Laboratory include: electrical, natural gas, laboratory water, chilled water, domestic water, laboratory waste water, and sanitary waste water.

All electric power for the site is provided by the Western Area Power Administration (WAPA), fed in through the El Sobrante substation. Power purchases are arranged through DOE’s Northern California Power Purchase Consortium, which serves the electric power needs of DOE facilities in the San Francisco Bay Area, namely LBNL, Lawrence Livermore National Laboratory, and the SLAC National Accelerator Laboratory.

The electrical lines come in from the eastern side of the laboratory on the north side (Zone 6), feeding to the 36 Substation. From this substation, electrical power is distributed throughout the laboratory. PG&E electrical lines are overhead (see Figure 5) with laboratory transmission lines underground.

Electrical Substation Building 36⟶	Substation 36A ⟶	Provides power to LBNL buildings.
	Substation 32 ⟶	Provides power to the University of California Berkeley and serve as backup power to the laboratory.

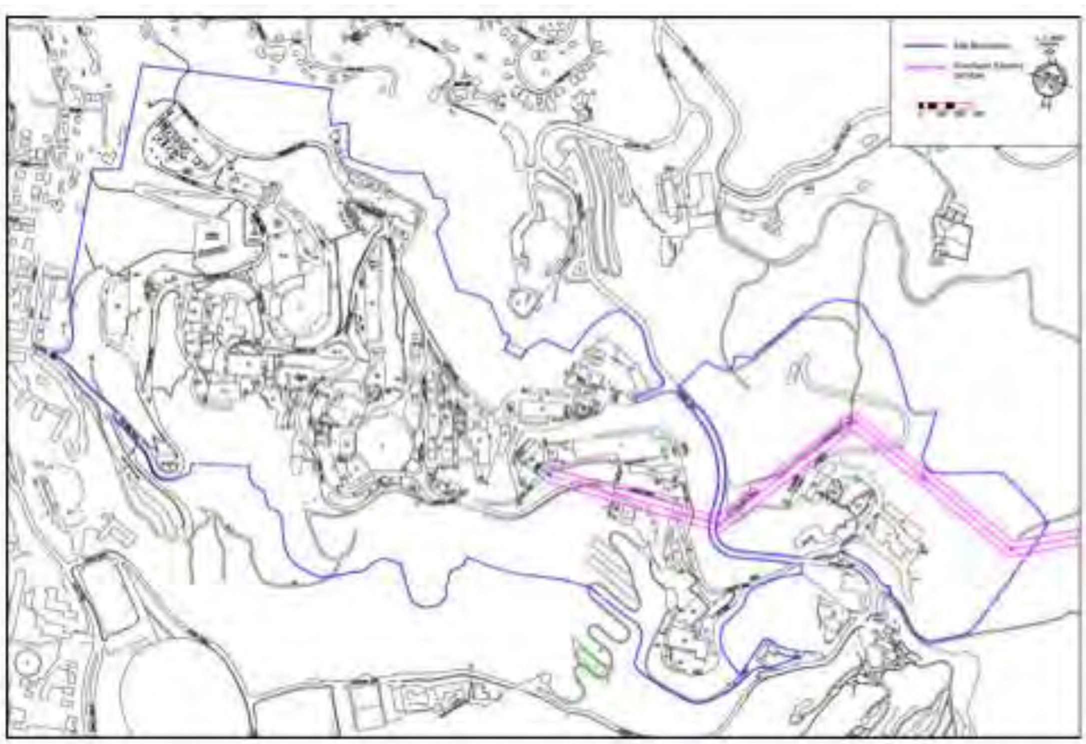


Figure 5 – Overhead Electrical Lines

Natural gas is provided by the Defense Logistics Agency and is transported through PG&E's infrastructure. The gas lines come up through Zone 2 of the laboratory, just below Building 88 (near Building 13E). There is a main gas valve at this location to shut off gas in the event of an emergency, which is equipped with an automatic earthquake shut-off valve. Natural gas is used primarily for heat at the laboratory, as well as for use in some experiments.

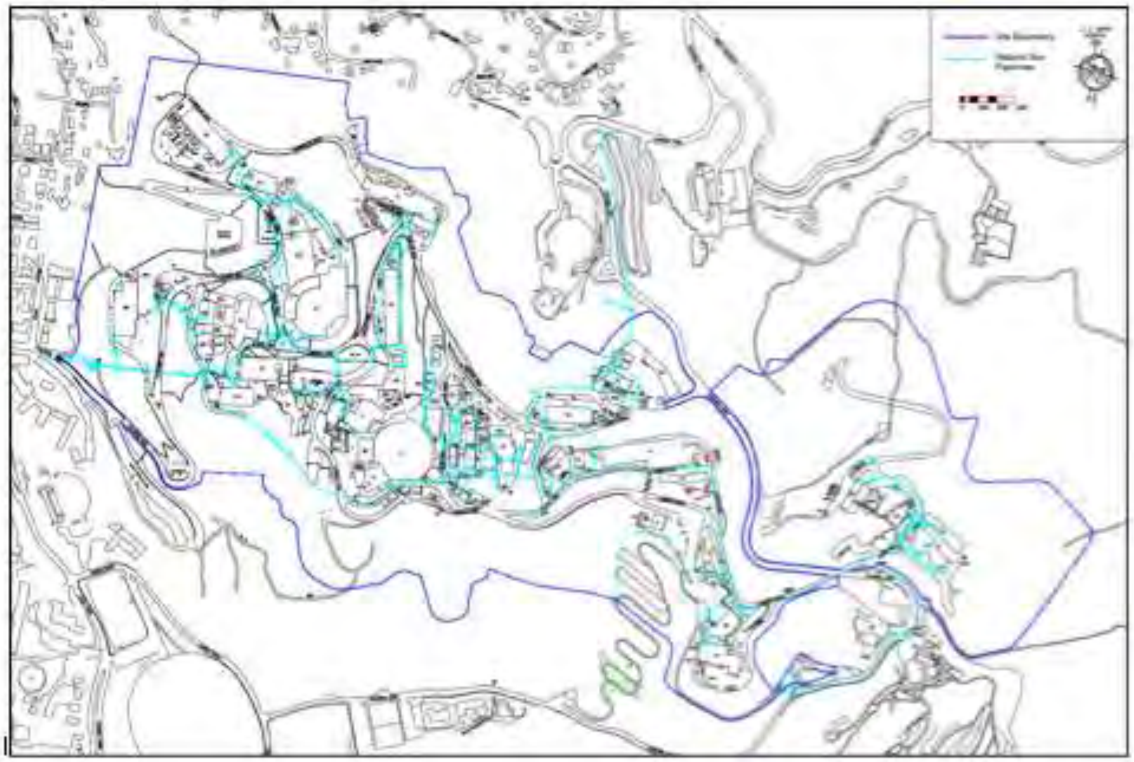


Figure 6 – Natural Gas Lines

Domestic water and laboratory water is provided by the East Bay Municipal Utility District (EBMUD) originating in the Sierra Nevada watershed. The site has no drinking water wells. The domestic water originates in Sierra Nevada watershed and is transported to the Bay Area and ultimately to LBNL through a system of lakes, aqueducts, treatment plants, and pumping stations. EBMUD tests the water for contaminants and treats it to meet disinfection standards required by the Safe Drinking Water Act.

The site maintains three water towers, each containing approximately 200,000 gallons of water. One tank, located near Building 82, is located in Zone 1. The second tank is located near Building 68 in Zone 4, with the last tank in Zone 6 near Building 13J. The tanks in Zones 1 and 4 are equipped with an earthquake automatic shutoff valve and UPS to ensure the tanks shut off during a seismic event. These tanks, fed by EBMUD) are fed through the Berkeley line in Zone 1 and the Shasta line in Zone 3. These systems are looped in the event one fails. The potable water system is also used for the fire protection systems, lab experiments, and to cool the laboratory computing systems.

Some buildings (e.g., Buildings 2 and 70) have processes in place to treat or neutralize lab waste water. Additionally, there are administrative controls, and sometimes retention tanks, for discarding water used in laboratories. Some waste water must be processed by Waste Management as hazardous waste.

The sanitary sewer system (Building 13E) expels waste water from the laboratory with the main system located off site just north of Building 88.

3. EMERGENCY RESPONSE ORGANIZATION

The Emergency Response Organization (ERO) is a structured organization with overall responsibility for initial and ongoing emergency response and mitigation for events at LBNL [DOE O 151.1C, CRD 8]. The ERO has the responsibility for maintaining effective control of an event/incident and is comprised of two teams, the EMT, which handles strategic aspects of the site response, and the ICT, which handles the tactical response for emergencies [DOE O 151.1C, CRD 8].

LBNL has selected individuals based on experience and daily workplace responsibilities to fill the positions of the ERO. Once selected, personnel are trained and placed on a schedule for timely recall and effective performance of ERO functions. If necessary, the ERO can integrate emergency response activities with those of local agencies and organizations that may provide on-site response services, which is consistent with the NIMS [DOE O 151.1C, CRD 8 and 8.b].

The EMT is staffed through assignment of “best available” personnel, based on primary responsibilities, qualifications, knowledge, and experience or Functional Manager/Division Director assessment. Each EMT position is staffed three-deep with qualified and designated personnel that are available on demand to assume position roles and responsibilities [DOE O 151.1C, CRD 8]. Effective response to emergency events requires the availability of at least one qualified responder for each EMT position. EMT members generally only serve in one position; however, an exception involves EM personnel who may be trained/qualified in multiple positions in the event that a majority of the EMT members are sheltered or unavailable and cannot respond to the EOC in a timely manner.

The BSO is responsible for assigning/reassigning personnel, coordinating training with EM, and maintaining a BSO EMT roster for federal positions. The Emergency Manager coordinates with the BSO Emergency Management Coordinator to identify specific ERO positions. For an organizational chart of the ERO, reference Appendix B.

3.1 Incident Command Team

The ICT is responsible for tactical command, control, and coordination of field operations at the scene and accomplished using the ICS. The ICT represents a mature incident command system and includes representatives from the Alameda County Fire Department, with additional support personnel (i.e., UCPD, Protective Services, Facilities, Building Emergency Teams, and Building Managers) as well as subject matter experts (SMEs) (i.e., Radiological Protection, Industrial Hygiene, etc.), as needed.

3.1.1 Incident Commander

There is no pre-designated Incident Command for events at LBNL, but is based on the event type and the first to arrive at the scene. The position of Incident Commander will reside with the senior or most qualified responder and may change as other responders report to the scene. The Incident Commander is responsible for the initial assessment of the situation, maintaining operational control, establishing incident objectives and priorities, initial notifications, and protective action implementation. The Incident Commander is authorized to request resource augmentation through mutual aid, if necessary.

3.1.2 Fire Department

The Alameda County Fire Department, Engine 19 provides multiple services to the laboratory in emergency response for full-time fire suppression and rescue services, emergency dispatch, fire alarm monitoring, technical rescue, hazardous material response, pre-incident planning, assigned fire prevention activities, emergency medical services, personnel training/drills, public education, maintenance and testing of the ACFD equipment.

ACFD is a 24/7/365 operation that responds to 911 calls for fire, medical emergencies, and hazardous material events. ACFD operates in three shifts with three captains trained at a paramedic Level 1 Hazardous Materials Specialist. There are nine firefighters trained as an Emergency Medical Technician (EMT), Level 1 Hazardous Materials Technician at a minimum. This provides LBNL with coverage from one captain and three firefighters on site around the clock. Although no Battalion Chief/Command Car is assigned to the site, this resources can be called for a structure fire or rescue operation. Laboratory-specific building floorplans, procedures, and records are maintained in the engine, file cabinet in station, and at Blackberry Gate. This includes information specific to hazardous materials and potential consequences.

ACFD Training Program and training records for Station 19 personnel were captured for the development of the 2014 LBNL BNA. ACFD training policies and standards are contained in the 50.000 series of the ACFD Official Action Guides (OAGs). ACFD new hires are required to pass a rigorous recruit academy. There is a minimum set of standards for entry-level firefighter that includes a two-year probation, as well as wildland firefighting, which are documented in the ACFD OAGs. There are standards for wildland firefighting that are part of the “red card” program. The training includes ICS 100 (Incident Command System), S-130 (Firefighter Training), S-190 (Introduction to Fire Wildland Behavior), L-180 (Potential Hazards and Human Factors on the Fire line) and S-131 (Advanced Firefighter Training).

Minimum qualifications for company officers include being a member of ACFD for five years, completion of a Task Book for Captain, completion of Fire Command 1, Instructor 1A from the State Fire Marshal’s Office, and completion of ICS 300. There is an Officer Academy and a one-year probationary period. There is a training program for hazardous materials and technical rescue training for those personnel in stations requiring that training. This training requirement is documented in the ACFD OAGs and the training tracked in the ACFD Records Management System. This is important because LBNL operates as a Hazardous Materials Operational Emergency Program and therefore ACFD receives additional training for site and building familiarity to include hazardous materials for the site.

Station 19 personnel take part in LBNL drills and exercises required by DOE 151.1C, participate in quarterly interface meetings with Emergency Management staff and UCPD, and attend building tours, site familiarization, and first responder training that is provided by Protective Services and based on the EPHS. Fire fighters assigned to Station 19 receive additional site familiarization of LBNL facilities by conducting monthly fire extinguisher inspections. Station 19 personnel and ACFD battalion chiefs receive LBNL site-specific training including General Employee Radiological Training (GERT) and Advanced Light Source (ALS) training. Records for this training was also reviewed.

For facility-level events and medical responses, additional fire and medical resources are commonly provided by Berkeley Fire personnel. For regional or site-wide events, aid would be requested and coordinated through ACRECC.

3.1.3 Security Force

The LBNL Security Force, operated through Protective Services and provided via contract with UCPD is charged with maintaining a safe and secure work environment for employees and visitors; preventing unauthorized access; protecting Special Nuclear Materials (SNM); providing traffic safety; and deterring, detecting, and preventing criminal activity at the laboratory.

Day-to-day operations for the Security Force include monitoring and responding to site alarms and providing access and egress to the site. The Security Group is led by a Sergeant, serving in a tactical-level supervisory position responsible for managing security-related activities at the incident scene and a liaison for LBNL Protective Services during normal day-to-day operations. A sergeant on site Monday through Friday during normal business hours. The SPOs staff LBNL with three shifts (day, evening, and swing). There are always two SPOs serving as rovers and on SPO manning Blackberry Gate. A SPOs is at Strawberry Monday through Friday from 5 a.m. to 8 p.m. and Grizzly from 6 a.m. to 9:30 a.m. There are also two SPOs monitoring off-site locations: One Monday through Friday during normal business hours for Building 977 and a 24/7/365 Security Police Officer at Building 943.

During incidents/emergency events, the Security Force is responsible for establishing cordons and entry control points, reporting directly to the IC. For security-related events, mutual aid may be requested from UCPD for badged or armed officers.

The entire Security Force consists of 25 SPOs, which are certified by the State of California's Bureau of Security and Investigative Services. This certification, mandated for Security Guards by the State of California, is a 40-hour (minimum) training program consisting of:

- Powers to Arrest and Weapons of Mass Destruction (8 hours)
- Communication and Its Significance (4 hours)
- Public Relations (4 hours)
- Observation and Documentation (4 hours)
- Liability – Legal Aspects (4 hours)
- Trespass (4 hours)
- Officer Safety (4 hours)
- Evacuation Procedures (2 hours)
- Arrest, Search and Seizure (4 hours)
- Crowd Control (2 hours)

UCPD has added the following courses to the UCPD SPO curriculum:

- First Aid/CPR (4 hours)

- Administrative Issues/Radio Communications/Time Keeping (4 hours)
- Defensive Tactics, Baton and OC (8 hours)
- Review of UCPD Policies and Procedures
- Sexual Harassment Prevention Training

As a part of the laboratory's required training (assigned and tracked through the LBNL Subcontractor Job Hazards Analysis), the SPOs also receive EHS Overview Training, General Employee Radiological Training, Fire Extinguisher, and ICS 100 and 200. For more information on LBNL Security, reference the Site Security Plan and the Security Officer Training Plan.

3.1.4 Field Observer

A Field Observer is used as a liaison to transmit information between field operations and the EOC. Field Observers are staffed with PS personnel, primarily Fire Protection, and deploy to the scene when 911 calls are received during normal operating hours. If necessary, Field Observers would be recalled by the Duty Officer or Emergency Manager during off hours. For more information on the Field Observer position and responsibilities, reference EM-JAID-022.

3.1.5 Building Emergency Team

Each occupied facility is assigned a BET to conduct emergency planning activities (i.e., conducting evacuation drills or developing a Building Emergency Plan) and ensure emergencies are reported for incidents within their facilities [DOE O 151.1C, CRD 6.a.(1)]. BETs can be used to support emergency response personnel by providing building or occupant-specific information. Most importantly, BETs are used to coordinate protective actions, conduct personnel accountability and provide crowd control at Emergency Assembly Areas.

3.1.6 Community Emergency Response Teams

CERT members assist emergency responders for hazards that may impact LBNL in basic disaster response skills, such as crowd control, shelter operations, basic fire suppression, light search and rescue, victim transport, basic medical assessments, and triage. CERT members must complete FEMA-approved LBNL CERT training or county/city CERT training, as well as additional courses specific to LBNL hazards and response.

3.1.7 Damage Assessment Teams

DAT members perform assessments to inspect facilities as safe, restricted, and unsafe for post earthquake, fire, wind, and flood events for LBNL buildings, bridges, roads, utilities, pump stations, tanks, and water/wastewater treatment facilities. DAT members will also make recommendations for shelters, medical triage areas, and emergency support facilities. DAT members must attend FEMA-approved LBNL Safety Assessment Program (i.e., ATC-20 or ATC-45) training or complete the training through the State of California.

3.1.8 Medical Emergency Response Teams

MERT members are trained and equipped to oversee medical triage areas, provide basic medical care, patient triage, and patient stabilization. Members of the MERT require training at the Emergency Medical Technician or Paramedic levels. Positions on this team require state certifications.

3.1.9 Radiological Technicians

The laboratory is staffed with Health Physicists and Radiological Technicians that conduct routine radiological surveys as part of normal operations in accordance with 10 CFR 835 and DOE O 458.1. This group of SMEs is on call 24/7/365 and responds to an emergency event in accordance with EHS-700.

Health Physicists and Industrial Hygiene personnel reside in the Environment, Health, Safety (EHS) Division and fall under the purview of the Radiological Safety Officer (RSO). The RSO has responsibility for developing response procedures and identifying and tracking training and certification requirements. For more information on the Radiological Program, reference ES&H Manual, PUB-3000 Chapter 21.

3.1.10 Industrial Hygienists

Industrial Hygienists provide workplace exposure monitoring of chemical and physical agents for daily activities, as well as in response to an emergency in accordance with the EHS Manual, PUB-3000 Chapter 45. The criteria for hazard identification, chemical monitoring and regulatory requirements are provided in 29 CFR 1910.

Industrial Hygienists reside in the EHS Division and fall under the purview of the Chemical Hygiene Program Manager. This individual has responsibility for developing response procedures and identifying and tracking training and certification requirements. For more information reference the EHS Manual, Chapter 45.

3.1.11 Health Services

LBNL is dedicated to protecting the workforce on a daily basis as well as during an emergency, providing health programs and preventive measures to ensure health and wellness of laboratory personnel is ongoing. Medical staff of the Health Services, EHS Division, addresses health and safety hazards directly related to the workplace, and provide quality comprehensive occupational medical surveillance in day-to-day activities. During emergencies, Health Services provides emergency medical attention and limited decontamination capabilities for employees. Health Services can also provide crisis intervention (medical and psychological) after a work-related or personal traumatic event or emergency has occurred.

The Site Occupational Medical Director (SOMD) specifies training requirements for medical personnel, which are compatible with off-site standards and State of California certifications. On-site medical personnel have been provided with information and training on facility/site-specific hazardous materials. The SOMD and RN for Health Services have received training from Radiation Emergency Assistance Center Training Site (REAC/TS) to care for radiation accident victims.

3.1.12 Technical Specialist/Subject Matter Expert

Additional technical specialists or SMEs (i.e., engineers, geologists, Information Technology) are designated for the laboratory in areas such as security, radiological safety, industrial hygiene, building maintenance, engineering, safety and fire protection. Expertise is available at the laboratory to assist the ERO in mitigation and recovery efforts, as needed.

3.2 Emergency Management Team

Emergency Management Team (EMT) personnel are a cadre of SMEs and support staff assigned to the EOC. These individuals are responsible for supporting the ICT and providing strategic command, control, and coordination of the balance of operations and communications with laboratory-wide and off-site agencies. The LBNL EMT positions are staffed three deep to ensure 24/7/365 coverage.

The overall objective of the EMT is to mitigate the emergency event (through the coordination and/or support of response assets), provide strategic direction to the emergency response, support tactical response operations in the field through the ICT, provide protective action information to laboratory personnel and protective action recommendations to the public, as well as communicate with off-site agencies and jurisdictions. Managers on the EMT represent the functional experts of the laboratory organization structure for mission support. Functional managers serve on the EMT, and have additional responsibility for the administration of the Emergency Management Program and contribute to effective emergency planning and response by:

- Reviewing emergency planning and preparedness documents.
- Assigning personnel for EMT coordinator positions.
- Developing and overseeing training curriculum and certifications for adjunct responders.
- Ensuring EMT/ERO members are trained and qualified.
- Establishing and maintaining schedules for adjunct personnel.
- Ensuring EMT/ERO members have the appropriate PPE.
- Supporting emergency management drills and exercises.
- Serving as planners, players, or controllers/evaluators during exercises.
- Identifying essential activities, critical infrastructure, and emergency operating essential records.
- Supporting the identification, tracking and closure of emergency management corrective actions.

The managers on the EMT are responsible for strategic activities related to the event, while the Emergency Oversight Team (EOT), which is staffed with BSO personnel are responsible for response oversight and public information. Members of the EMT and EOT may expand representation based on the nature of the event.

3.2.1 Command Section

3.2.1.1 Emergency Director

The Emergency Director is responsible for strategic actions in support of emergency response and is assigned with overall command and control [DOE O 151.1C, CRD 8.a]. The Emergency Director manages all aspects of site response to an Operational Emergency that has impacted the laboratory and ensures off-site notifications have been conducted, protective actions have been implemented for on-site personnel and protective action recommendations have been communicated to off-site personnel [DOE O 151.1C, CRD 8.a]. For more information on the responsibilities of the Emergency Director, reference EM-JAID-001.

3.2.1.2 Mission Support Officer

The Mission Support Officers assist with identifying essential activities for research programs as well as critical infrastructure. This EMT position communicates and assists with decision-making that affects research divisions and coordinates activities that have the potential to impact safe operations or require suspension/shut-down of operations. MSOs are defined as leadership representatives from the following organizations:

- Physical Sciences
- Computing Sciences
- Applied Physics
- Nuclear Sciences
- Computing – ACDO
- Operations
- Scientific Computing

MSOs serve on the EMT and are essential personnel for continuity events and recovery operations.

3.2.1.3 Emergency Manager

The Emergency Manager has decision-making responsibility and requisite authority to categorize and classify emergency events, which constitutes declaration of an Operational Emergency. Additional responsibilities of the Emergency Manager include: determining and communicating protective actions, conducting initial notifications, activating the EOC, and recalling the EMT. These individuals also oversee, monitor, and direct EOC operations, off-site communications, and the notification process. For more information on the responsibilities of the Emergency Manager, reference EM-JAID-002.

3.2.1.4 Public Information Officer

The Public Information Officer is responsible for gathering emergency event information, developing announcements for workers, and press releases for the release of information to the public and media. The Public Information Officer works with the Emergency Director and the DOE-BSO to obtain approval for the release of information. Once approved, the Public Information Officer may either directly release the information to the media and public or provide the information through the Emergency Press Center (EPC) or Joint Information Center (JIC), when activated, for dissemination. Additionally, the Emergency Public Information Officer conducts media monitoring, rumor control, and communicates information with DOE, federal emergency response organizations, state, and local governments, as appropriate. For more information on the responsibilities of the Public Information Officer, reference EM-JAID-006.

3.2.2 Planning Section

The Planning Section gathers and analyzes information, maintains WebEOC and a chronological event timeline for development of a final report. This section also keeps decision-makers informed and tracks resources. Lastly, this section summarizes the EOC objectives/Incident Action Plan, defines schedules, resources, and actions/priorities.

3.2.2.1 Planning Section Chief

The Planning Section Chief is responsible for developing objectives and defining schedules, resources, and actions required for the next operational period. The Planning Section Chief also coordinates the collection of event documentation. For more information on the responsibilities of the Planning Section Chief, reference EM-JAID-005.

3.2.2.2 Documentation Unit Leader

The Documentation Coordinator provides support to the Emergency Director and Emergency Manager by documenting decisions and actions of the event, creating a collective timeline of response actions. This position also conducts administrative support functions for the EOC. For more information on the responsibilities of the Documentation Unit Leader, reference EM-JAID-020.

3.2.2.3 Protective Actions Unit Leader

The Protective Actions Unit Leader provides support to the EHS Manager for protective action determination by developing plume models. The Protective Actions Unit Leader also provides meteorological data and develops maps showing areas of damage. This position communicates with field monitoring teams and shares information with off-site response agencies. For more information on the responsibilities of the Protective Actions Unit Leader, reference EM-JAID-016.

3.2.3 Operations Section

3.2.3.1 Operations Section Chief

The Operations Manager is responsible for analyzing the overall impact of the emergency on operations, monitor information on laboratory infrastructure, request supplies and resources (i.e., facilities, services, communications, personnel and materials) needed in support of the ICT. This position has direct communication with the Incident Command Shadow and integrates the field response with the EOC response. The Operations Section Chief will be the EHS Manager for a hazardous materials release, Facilities Manager during an earthquake, Fire Manager for a fire/wild land fire, and Security Manager for a security event. For more information on the responsibilities of the Operations Manager, reference EM-JAID-003.

3.2.3.2 Environment, Health, and Safety (EHS) Manager

The EHS Manager oversees and monitors the operations of the safety organization, medical, and consequence assessment (including hazardous material monitoring, modeling, and meteorological) response teams, to include the activities of adjunct personnel (Radiological and Industrial Hygiene personnel). This position also provides expertise with regard to hazardous material releases to present the most effective protective action/protective action recommendation. For more information on the responsibilities of the EHS Manager, reference EM-JAID-023.

3.2.3.4 Facilities Manager

The Facilities/Engineering Coordinator provides support to the Facilities Manager, coordinates and documents infrastructure assessments and repairs. For more information on the responsibilities of the Facilities Manager, reference EM-JAID-009.

3.2.4 Security Manager

The Security Manager provides oversight for safeguards, security, and protection programs response efforts and acts as liaison for coordination of external resources. For more information on the responsibilities of the Security Manager, reference EM-JAID-025.

3.2.5 Logistics Section

The Logistics Section provides overall communications in the EOC and for the laboratory. This section also obtains and tracks resources for the event, coordinates transportation for personnel and resources and serves as a liaison with Subject Matter Experts (SMEs) when necessary.

3.2.5.1 Logistics Section Chief

Ensures logistical requests are met for response support equipment, supplies, and communications. For more information on this position, reference EM-JAID-021.

3.2.5.2 Information Technology Manager

The Technology Manager manages the site technology infrastructure, computer network, telecommunications, and Public Address (PA) system. This position provides subject matter expertise on the technology infrastructure, technology initiatives and cyber security events. For more information on the responsibilities of the Information Technology Manager, reference EM-JAID-004.

3.2.6 Finance Section

The Logistics Section provides overall communications in the EOC and for the laboratory. This section also obtains and tracks resources for the event, coordinates transportation for personnel and resources and serves as a liaison with Subject Matter Experts (SMEs) when necessary.

3.2.6.1 Finance Section Chief

This position identifies costs of the emergency response, to include costs sustained from the event that impact operations, facilities, and deliverables and tracks expenditures. For more information, reference EM-JAID-007.

3.2.6.2 Human Resources Manager

The HR Manager assists with scheduling and pay provisions for response personnel. This position also coordinates worker's compensation issues specific to the event and assists with site-wide personnel accountability. In the event of casualties, this position assembles a team to provide next-of-kin notifications for casualties. Reference EM-JAID-015 for more information on the HR Manager.

3.3 Emergency Oversight Team

The DOE and BSO managers are primarily responsible for off-site agency interface and communication to the public. The BSO works closely with Emergency Management in the EOC to assure the level of staffing and composition of BSO emergency response is commensurate with the type and scope of the emergency event. The BSO Emergency Management Coordinator serves as a clearinghouse for BSO response activities in support of the Emergency Director, and is the coordinator for directed tasks from BSO or other DOE/NNSA Senior Energy Official, on events that involves the use of BSO resources. The BSO Emergency Management Coordinator serves as an advisor to the BSO Manager, if necessary, for emergency response capabilities and provides or obtains the necessary expertise to identify and coordinate federal resources in support of the emergency response. The BSO Emergency Management Coordinator assists with the communication and coordination within DOE HQs, and with other federal, state, and local agencies and jurisdictions.

3.4 Emergency Direction and Control

Information on Emergency Direction and Control is outlined in Sections 2.1, 2.2 and 2.3. In general, LBNL is responsible for response activities on the site, while BSO is responsible for off-site agency interface and communication to the public. The Emergency Director heads the EMT organization and is responsible for activities conducted during an emergency.

3.5 Emergency Management Operations

The ERO is responsible for conducting numerous activities during its response to an Operational Emergency, from declaration to termination. The Emergency Director oversees ERO personnel's response efforts, while the Incident Commander oversees tactical field response operations and the Emergency Manager oversees strategic EOC response operations. Minimum Operational Emergency tasks are listed on the EM-JAID-010 and must be conducted in accordance with DOE O 151.1C unless the task is deemed as "not applicable," which is based on the event type.

3.5.1 Declaration of an Operational Emergency

Upon notification of an emergency condition, or upon event recognition/identification/discovery, the Incident Commander will conduct an initial evaluation of the event, initiate emergency response, and notify necessary personnel. Once notified of an emergency, the Emergency Manager utilizes information from the Incident Commander, BET, SPO, Plant Maintenance Technician (PMT), and/or the Field Observer, in addition to the EALs to complete categorization/classification of the event. This assessment may include the recall of other Protective Services staff or select EMT personnel (namely the Command Section) to assist with the evaluation of the emergency condition. The Emergency Manager is ultimately responsible for declaring an Operational Emergency, using the EALs to determine the appropriate categorization and classification of the emergency event, and determining the initial protective actions for implementation [DOE O 151.1C, CRD 11.b.(2)].

Once the Emergency Manager declares an Operational Emergencies, the Emergency Director authorizes the commitment of resources. The Emergency Director and DOE-BSO also approve communication of emergency information and supports the EMT's identification of the commitments necessary to manage and mitigate the consequences of the event as provided in Policy 07.06.001.002, Emergency Management.

Operational Emergencies that are the result of natural weather phenomena, mass casualty events, or security-related events and do not involve a release of hazardous materials are categorized as Operational Emergencies, Not Further Classified (NFC) [DOE O 151.1C, CRD 11.a.(2) and 11.a.(2)(a)6]. While these events are significant in nature, they do not pose the threat or consequences to the public that hazardous material releases would cause.

Typically, Operational Emergencies, NFC consist of natural phenomena emergencies such as an earthquake. However, if the event damaged a facility with chemicals or radiological materials and caused a release, then it must be classified into one of three classification levels, listed in order of increasing severity:

- Alert
- Site Area Emergency
- General Emergency

Operational Emergencies requiring classification use the event information, EPHAs, and EALs to properly categorize and classify the event to determine the resources necessary to mitigate the situation and implements protective actions. LBNL is generally self-sufficient in its approach to emergency response and maintains a wide range of emergency response capabilities that can be deployed in the event of an emergency; however, during an Operational Emergency, support and response is required from off-site agencies. Overall management and coordination of the emergency response to Operational Emergencies is accomplished through the recall of the ERO, which deploys the ICT to the field and recalls the EMT to the EOC.

3.5.2 Recall of the EMT

ACFD and UCPD are recalled through the 911 call, which is received by UCPD and potentially ACRECC. ACFD, UCPD, and Protective Services personnel are dispatched to the scene where initial size up is conducted. If the potential exists for the event to become an Operational Emergency (time-urgent response or mutual aid is required), the Emergency Manager may contact the Field Observer to discuss the event.

Upon notification of an emergency condition, Emergency Management personnel are recalled to assist with the evaluation and categorization/classification of the emergency condition. Upon declaration of an Operational Emergency, the EMT, if it is safe to do so, is recalled to the EOC. Under most conditions, the EOC will be staffed and declared operational within 60 minutes of declaration of an Operational Emergency [DOE G 151.1-3 P/E 6.9]. During normal business hours, this time frame will generally be reduced, provided the EMT members are not required to initiate protective actions. During off-normal hours, activation of the EOC may take longer than 60 minutes, dependent on protective actions that have been initiated or travel conditions in the region.

Staffing of the EOC is event specific so a graded approach is used. For example, a small-scale event may only require staffing of a few key EMT positions, such as the Command Staff, whereas a large-scale event may require staffing of all ERO positions and could include call-out personnel with specialized skills and mutual aid. In general, minimum staffing of the EOC (to declare the EOC operational) requires Protective Services personnel, Emergency Director, EHS Manager, Fire Manager, Facilities Manager, Security Manager, IT Manager, Public Information Officer, and the BSO Emergency Management Coordinator. Once the EOC has been activated, EMT members conduct required emergency response activities based on position-specific job aids while documenting the event circumstances and decisions. Prior to shift turnover or termination, each EMT Manager submits documentation and information on the emergency response to the Emergency Director [DOE O 151.1C, CRD 12.h]. This information becomes an official record, is included in the overall event timeline, and is essential to the development of the Final Report and identifying strengths, issues, improvement opportunities, and lessons learned.

4. OFF-SITE RESPONSE INTERFACE

Effective interfaces must be established and maintained to assure that emergency response activities are integrated and coordinated with the federal, state, and local agencies and organizations responsible for emergency response and protection of the workers, public, and environment [DOE O 151.1C, CRD 9]. BSO has management oversight of the LBNL Emergency Management Program and generally coordinates emergency planning and preparedness activities with off-site federal agencies, while the PS-EM focuses on coordination of state and local agencies [DOE O 151.1C, CRD 9].

LBNL actively participates in and coordinates emergency management activities with the State of California, Alameda County, City of Berkeley, City of Oakland, and the UC Berkeley. These local agencies and organizations are responsible for off-site emergency response and for protection of the health and safety of the public. LBNL may provide protective action recommendations to these jurisdictions due to a hazardous materials release.

The Emergency Manager is responsible for identifying and assigning an individual with the appropriate authority, knowledge and training with the responsibility for establishing and maintaining ongoing, effective interfaces with off-site political, technical, security (e.g., local law enforcement), public health, and emergency services officials. A majority of these activities occur during various monthly and quarterly meetings. Topics of discussion are primarily focused on sharing of information and emergency planning and preparedness efforts, sharing of information, situational awareness, significant events, and hazards for the area.

Depending on the type of emergency encountered and the need for outside resources, the ERO can contact outside agencies for assistance in resolving the emergency situation. This assistance can range from firefighting and ambulance services to activation of county and city EOC facilities. Where appropriate, the laboratory enters into formal mutual assistance agreements with such agencies. A complete listing of the emergency management-related agreements and the representing agency of the laboratory can be found in Table 2.

It is the policy of the U.S., and specifically the DOE/NNSA, to have in place, a comprehensive and effective program to assure continuity of essential federal functions under all circumstances. As a baseline of preparedness for the full range of potential emergencies, all federal agencies are required to develop a viable Continuity of Operations (COOP) capability that assures the performance of essential functions during any emergency or situation that may disrupt normal operations. LBNL has developed a Continuity Program and has facilitated integration of DOE O 150.1A into the Emergency Management Program. The Continuity Program is highly focused on the mission and research LBNL conducts, with additional guidance and expertise for recovery and reconstitution efforts.

Off-site response interface activities are listed with greater detail in Section 3.7, provided to BSO via the monthly PS-EM and DOE-BSO meetings and are also captured in the annual submission of the Emergency Readiness Assurance Plan (ERAP) and Continuity Readiness Assurance Report (CRAR).

4.1 Federal Agencies and Assets

The DOE Radiation Emergency Assistance Center/Training Site (REAC/TS) provides medical advice, specialized training, and on-site assistance for the treatment of all types of radiation exposure accidents. Additionally, through the Cytogenetic Biodosimetry Laboratory (CBL), REAC/TS provides for post exposure evaluation of radiation dose received.

The DOE Radiological Assistance Program (RAP) teams provide off-site radiological response in support of DOE. In an off-site emergency situation, the RAP team is responsible for responding, under the direction of the DOE/NNSA/NA-42. Other RAP Teams (from other regions) providing support to LBNL would most likely be assigned to, and controlled through, the Federal Radiological Monitoring and Assessment Center (FRMAC), with their focus external to the laboratory, to include interaction with California state responders.

The Department of Health and Human Services (HHS) is the government’s principal agency for protecting the health of all Americans and providing essential human services. HHS Region 9 services the East Bay Area, to include Alameda County and LBNL. Operating under the HHS umbrella is the Center for Disease Control (CDC), which protects the health of the nation by monitoring and preventing disease outbreak (to include bioterrorism), implement disease prevention strategies and provide guidance on biological agents. Also residing with HSS, is the National Institute for Health (NIH), which serves as the nation’s medical research agency and study the nature and behavior of living systems, provides guidelines on pandemic planning as well as biological expertise to enhance health and prevent and reduce illness. The Food and Drug Administration (FDA) is an agency within the U.S. Department of Health and Human Services that oversees the core functions of the agency: Medical Products and

Tobacco, Foods, Global Regulatory Operations and Policy, and Operations. FDA is responsible for protecting the health by assuring that foods are safe, wholesome, sanitary and properly labeled; human and veterinary drugs, and vaccines and other biological products and medical devices intended for human use are safe and effective.

The Environmental Protection Agency (EPA) also resides under the Department of HHS and serves to protect human health and the environment through the implementation of policies concerning natural resources, energy, transportation, agriculture, industry, and international trade by identifying environmental risks and protective measures. The EPA, Region 9 Office serves California and. The Office of Inspector General (OIG), within the EPA, is responsible for audits, evaluations, and investigations of department agencies and government contractors to prevent and detect fraud, waste, and abuse.

The EPA Radiological Emergency Response Team (RERT) provides resources, including personnel, specialized equipment, technical expertise, and laboratory services to aid coordinating and cooperating agencies and state and local response organizations in protecting the public and the environment from unnecessary exposure to ionizing radiation from radiological incidents. It may become part of the FRMAC if one is established. The RERT provides the following:

- Monitoring, sampling, laboratory analyses, and data assessments using field emergency response assets.
- Technical advice and assistance for containment, cleanup, restoration, and recovery following a radiological incident.
- Assistance in the development and implementation of a long-term monitoring plan and long-term recovery plans.
- Coordination with fixed laboratory assets for in depth analysis and evaluation of large numbers of site-specific emergency response samples.

The Federal Bureau of Investigation (FBI) is an intelligence-driven and threat-focused national security agency with intelligence and law enforcement responsibilities. The FBI defends the United States and works to protect the public and communities from international and domestic terrorist threats, cyber threats and other criminal activity. The FBI also supports the nation’s economy, physical and electronic infrastructure and democracy. Although there is not an FBI liaison at LBNL, they have participated in annual exercises conducted at the lab. The FBI has the authority to become the Incident Commander in the event of a security-based incident requiring FBI efforts and/or assets. A seat is reserved in the EOC for an FBI representative.

Federal Emergency Management Agency (FEMA) supports citizens and first responders to ensure that the nation works together to build, sustain, and improve capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards. LBNL is supported through the FEMA Region IX office, which serves the states of California, Arizona, Hawaii, Nevada, and the Pacific Islands. The regional office provides advice and training to LBNL to improve capabilities for disaster preparedness, protection, response, recovery and mitigation.

The Federal Radiological Monitoring and Assessment Center (FRMAC) is responsible for coordinating all environmental radiological monitoring, sampling, and assessment activities for the response. The FRMAC is a DOE-led interagency asset that is available on request to respond to nuclear/radiological incidents. DOE leads the FRMAC for the initial response and transitions FRMAC leadership to EPA for site cleanup. The FRMAC is established at or near the incident location in coordination with DHS, the coordinating agency, other Federal agencies, state, and local authorities.

A FRMAC normally includes representation from DOE, EPA, the Department of Commerce, the DHS National Communications System, the U.S. Army Corps of Engineers (USACE), and other federal agencies as needed. Regardless of who is designated as the coordinating agency, when the FRMAC is activated, DOE, through the FRMAC or DOE Consequence Management Home Team (CMHT), coordinates all Federal environmental and agriculture radiological monitoring and assessment activities for the initial phases of the response. When the FRMAC is transferred to EPA, EPA assumes responsibility for coordination of radiological monitoring and assessment activities. (See the Recovery section of nuclear/radiological annex for information on the FRMAC transfer.)

The IMAAC is an interagency center responsible for production, coordination, and dissemination of the federal consequence predictions for an airborne hazardous material release. Through a partnership of the DHS, DOE, DoD, and the Department of Commerce (through the National Oceanic and Atmospheric Administration (NOAA)), EPA, NASA, and NRC, the IMAAC provides the single federal atmospheric prediction of hazardous material concentration to all levels of the Incident Command. The IMAAC is an off-site resource that supports the incident response remotely. The NARAC is the interim IMAAC.

The National Atmospheric Release Advisory Center (NARAC) is a DOE-provided, computer-based emergency preparedness and response predictive modeling capability. The NARAC is an off-site resource that supports the incident response remotely. NARAC provides real-time computer predictions of the atmospheric transport of material from radioactive releases and of the downwind effects on health and safety. When measurement data become available, they are used to improve model predictions.

4.2 Tribal

There are no tribal organizations that have emergency response or regulatory control at Lawrence Berkeley National Laboratory or within the lands or counties surrounding the site.

4.3 State

4.3.1 California

CAL-OES is a statewide emergency management effort that implements the state-wide all-hazards approach against threats and coordinates Essential Support Functions under the NRF. The purpose of CAL-OES is to serve as a leader in emergency management and security by building a safer more resilient California, leveraging effective partnerships, developing our workforce, enhancing our technology, and maintaining a culture of continuous improvement. CAL-OES supports effective collaboration in preparing for, protecting against, responding to, recovering from, and mitigating the impacts of all hazards and threats. These efforts allow California to plan, prepare for, and provide resources to mitigate the impacts of disasters, emergencies, crimes, and terrorist events, as well as effectively respond to and recover from both human-caused and natural disasters.

California is a member of the interstate Emergency Management Assistance Compact (EMAC), a congressionally ratified organization that provides form, structure and procedures for rendering emergency assistance between states. After a state of emergency declaration, California can request and receive reimbursable assistance through EMAC from other member states quickly and efficiently without issues of liability. The Secretary of CAL-OES and the states' EMAC Coordinator are responsible for facilitating requests for assistance pursuant to EMAC. Information on EMAC can be accessed at http://www.emacweb.org/index.php/component/stateinfo/?state=CA.

During an emergency the Governor may call upon the services, resources and capabilities of state agencies, departments, offices, boards, commissions, councils, and authorities. Below are the key agencies and departments that have primary or support roles in an emergency. State agencies not specifically listed in the plan may be called upon to carry out assigned activities necessary to mitigate the effects of an emergency in accordance with the California Emergency Services Act (ESA).

California Office of Emergency Services (CAL-OES) serves as the lead agency for coordinating emergency activities related to fire and rescue, management, search and rescue, law enforcement, and public information. This agency has resources for care and shelters, communications equipment, construction and engineering resources for damage assessments, fire services, hazardous materials expertise, law enforcement, long-term recovery efforts, management through SEMS, ESAs, and relevant regulations and Executive Orders, public information efforts, search and rescue, utilities coordination, and volunteer programs.

4.4 Local

CAL-OES functions within the executive branch of state government to coordinate overall emergency management activities for the State of California with other state agencies, local governments, private organizations, and the federal government. CAL-OES supports local governments to preserve life and property, or to protect the public health, peace and safety when a natural or technological disaster exceeds the capabilities of the local community.

Primary emergency planning efforts for the laboratory at the local level are conducted with and through Alameda County. The following offices reside with Alameda County and conduct activities for the laboratory:

- The Alameda County Coroner has the responsibility for legal confirmation and certification of deaths that occur at the laboratory and also have the right to conduct or order an investigation into the manner or cause of death for isolated incidents as well as mass casualty events.
- Alameda County Office of Homeland Security and Emergency Services helps prepare residents, businesses, and government entities within the county to respond and recover from large-scale emergencies or disasters. Alameda County Office of Homeland Security and Emergency Services conducts county-wide emergency planning and training for the community and disseminates emergency public information.

- Alameda County Fire Department (ACFD) provides fire services for approximately 508 square miles and 394,000 people with four Battalions, 30 fire stations, 26 engine companies, seven ladder truck companies, and one heavy rescue vehicle. ACFD offers, air/light support unit, one Rigid Hull, two Zodiac boats, 2500-gallon water tender, a dozer, and hazardous material response vehicle with specialized response teams for hazardous materials, urban search and rescue, and water rescue.
- UCPD is the chief law enforcement officer for the laboratory and provides law enforcement to preserve and protect life, property and the right of all citizens and prevent criminal activity.

4.4.1 Off-Site Medical Facilities

While several major medical facilities serve the surrounding area, LBNL has entered into a Memoranda of Understanding (MOU) with Alta Bates Medical Summit Center for the care and treatment of injured, potentially contaminated personnel. Alta Bates Medical Center provides comprehensive medical care to the East Bay as the largest private, not-for-profit healthcare Tertiary referral center.

4.5 Mutual Aid Agreements and Memoranda of Understanding

LBNL has several MOUs, Interagency Agreements (IAs), Mutual Aid Agreements (MAAs), and Memoranda of Agreement (MOAs). These agreements pertain to local jurisdictions and the laboratory and have been developed to facilitate coordinated responses to emergency situations. The agreements have been implemented between various local jurisdictions in recognition of the need for cooperation on emergency matters of mutual concern and to facilitate development of joint plans and procedures for coordinated responses to emergencies.

Under most circumstances, assistance will not be requested from outside sources until such time as the emergency cannot be controlled locally (i.e., by LBNL resources or routine mutual aid provided by ACFD and the City of Berkeley). Local jurisdictions are informed, to the extent possible, when an event or condition at the laboratory has the potential to escalate into an Operational Emergency in order to provide an opportunity to assemble support personnel. The table below provides a listing of MOUs that support LBNL's emergency-related operations.

TABLE 2 – MAAs, MOAs, and MOUs

MAAs, MOAs, and MOUs			
MOU/MOA/MAA/LOA	**LBNL REPRESENTATIVE**	**DATE OF AGREEMENT**	**EXPIRATION**
Alta Bates Summit Medical Center Contaminated and Injured	University of California on behalf of LBNL	04/16/2014	60 days written notice
UCB and LBNL Police Services	Deputy Director	07/01/1997	12 months written notice
LBNL and City of Berkeley Emergency Aid Response	Fire Chief Lab Director	04/06/2004	N/A
Alameda County Operational Area LBNL Special District	N/A	02/10/2005	12/31/2015

4.6 Additional Agencies

American Red Cross operates under Title 36 of the United States Code, section 3001, and under a federal charter (Public Law 58-4) as a support agency for the National Response Framework. American Red Cross provides assistance to individuals and families that may be affected by disasters to meet emergent needs by providing shelter, food, and health and mental services to address basic human needs. The goal is to help disaster victims resume their normal daily activities independently.

The Salvation Army is a non-governmental relief agency and provides assistance after natural or man-made disasters to alleviate suffering and help disaster victims rebuild their lives. The Salvation Army receives financial and material donations to supply basic food needs, help rebuild homes, and also provide emotional and spiritual support.

The World Health Organization (WHO) provides leadership on critical health issues and monitors the health situation to prevent and control disease and transnational threats to include emergency relief within the United Nations. The WHO has over 8000 public health experts from more than 150 countries working to improve the health and well-being of the public.

4.7 Networking

The laboratory participates in a number of groups and organizations to facilitate further networking opportunities to include the sharing of emergency planning and response practices, as well as lessons learned and best management practices. Emergency Management staff actively participates in the following:

The Emergency Management Issues and Special Interests Group (EMI/SIG) is sponsored by the DOE/NNSA/NA-41, Office of Emergency Management. Since its inception, the EMI/SIG has conducted annual EMI/SIG meetings, developed numerous emergency management products, shared lessons learned, and provided a network for emergency management professionals. The EMI SIG Steering Committee meets at least twice a year to plan activities for the EMI SIG and discuss EMI of interest to DOE and its contractors, with the EMI/SIG general membership meeting annually. In addition, EMI SIG has several Working Groups that focus on the development of training products and resources that can be used by all EMI SIG members.

PS-EM staff has membership on the EMI SIG Exercise and Drill, Continuity of Operations, Training, and Hazards Assessment Subcommittees and several members serve as Chair or Co-Chair of organizations. PS-EM participates extensively in the annual EMI SIG meeting and other activities (i.e., conference calls, working group meeting, etc.) that are conducted throughout the year. Although there are opportunities for the ACFD and UCPD for First and Field Responders Subcommittee and there is an opportunity for participation on the Emergency Public Information Subcommittee, LBNL does not participate on these committees.

International Association of Emergency Managers (IAEM) is a non-profit educational organization dedicated to promoting the goals of saving lives and protecting property during emergencies and disasters. The mission of IAEM is to serve its members by providing information, networking and professional opportunities, and to advance the emergency management profession.

IAEM conducts two conferences annually with the purpose to provide a forum for current trends, topics and the latest tools and technology in emergency management and homeland security, and to advance IAEM committee work. Sessions encourage stakeholders at all levels of government, the private sector, public health and related professions to exchange ideas on collaborating to protect lives and property training and conference opportunities.

The National Science Foundation (NSF) is an independent federal agency that promotes the progress of science to advance the health, welfare and prosperity of the nation while securing national defense. The NSF is the compliance agency for the Laboratory's ISO 14001 accreditation in emergency planning and preparedness.

City of Berkeley hosts a monthly meeting with UC and LBNL to share information and conduct emergency planning efforts. A representative from Berkeley Fire Department also attends these meetings. Additional topics covered include medical planning (PODs), exercises, emergency preparedness fairs, and resource sharing.

UC coordinates quarterly teleconferences between all UC campuses and LBNL and LLNL. These meetings cover emergency preparedness, planning, and continuity efforts. Additional topics include emergency communications.

PS-EM facilitates quarterly meetings with ACFD, Engine 19 Captain and the UCPD Sergeant that serves as a liaison to the laboratory for information sharing, resource requests, emergency planning efforts, program familiarization, as well as site familiarization and training efforts. This meeting is also used for exercise planning purposes and program integration.

Alameda County Sheriff's Office Department of Homeland Security coordinates monthly meetings for emergency planning efforts and sharing of information. This meeting is open to city and county emergency management representatives, as well as fire and law enforcement representatives. Other attendees include the regional coordinator from the state, Red Cross, among others. This group meets discusses regional issues and collaborates on potential solutions for the operational area.

Brookhaven National Laboratory facilitates the Science Laboratory Emergency Manager's Group, which includes the DOE Office of Science laboratories. This group includes personnel from various laboratories and holds monthly teleconferences for information sharing and benchmarking.

5. EMERGENCY FACILITIES AND EQUIPMENT

The laboratory strives to be as self-sufficient as possible in handling on-site emergency situations. Facilities, equipment, and supplies that are adequate to support emergency response are available, operable, and maintained to meet the needs determined by the EPHS and EPHAs [DOE O 151.1C, CRD 10.b.(3)]. Emergency facilities and equipment include the following:

- An adequate and viable EOC.
- Provisions for an alternate location if the primary EOC is not available.
- PPE, detectors, and decontamination equipment [DOE O 151.1C, CRD 10].

- Emergency notification capabilities to facilitate the safe evacuation of employees from the work place, immediate work area, or both [DOE O 151.1C, CRD 10.b].

The facilities that serve in various capacities during an emergency situation are discussed in the following sections.

5.1 Emergency Facilities

5.1.1 Laboratory Operations Center

Building 48 houses the LOC for situational awareness, monitoring, response dispatch, and an initial event assessment. The Emergency Management staff resides in Building 48, which occupies six offices, eight cubicles, one storage supply room, one break room, an alarm room, conference area, two restrooms, the and LOC. ACFD living quarters are on the second floor of the building and the fire-fighting, medical, and hazardous materials response equipment are in an attached garage/bay area.

There is a centrally located room with a video wall and cadre of radios that is used for the LOC. This area is used at the monitoring, as well as onset of an event, as well as standby and limited activations. Due to space issues, if the emergency requires categorization/classification then the PS-EM staff would recall the EMT and activate the EOC in Building 76. The building has two separate sources of power available via site-wide electrical power and a backup generator (EG-100-48).

5.1.2 Emergency Operations Center

The primary EOC for the EMT is in Building 76 [DOE O 151.1C, CRD 10.b.(1)]. The facility is on a concrete slab, supported by steel and concrete beams. The building is constructed of concrete shear walls on the first floor with reinforced masonry shear walls and steel braced frames for the second floor. The building is seismically rated as good and complies with DOE-STD-1020. The building has two separate sources of power available via site-wide electrical power and a backup generator (EG-100-48). The EOC is equipped with computers, television monitors, sound system, video conferencing system, two-way radios, telephones, printers, fax machines, mass communication systems, and access to NARAC capabilities for plume modeling [DOE O 151.1C, CRD 13.b and 13.c].

Sections have a dedicated telephone line and phone directories are posted at each workstation. Some personnel are equipped with satellite telephones and many of the EMT members have GETS and WPS. Each section is equipped with a laptop computer for use during EOC activation.

Specific equipment available in the EOC includes laptop computers, portable large maps of LBNL and the utility systems, monitors, radios, emergency operating vital records, communications equipment among other items. Specific equipment and testing for the EOC is documented in EM-MANL-001.

5.1.3 Alternate Emergency Operations Center

In accordance with DOE O 151.1C, an Alternate Emergency Operations Center (AEOC) must be available if the primary EOC becomes uninhabitable [DOE O 151.1C, CRD 10.b.(2)]. The AEOC should be located where it is highly unlikely that both the EOC and the AEOC would be rendered uninhabitable by the same event. Consideration should also be given to locating the AEOC outside EPZ or 180 degrees opposite the EOC, given prevailing wind conditions.

The AEOC does not duplicate the EOC but possesses the necessary equipment required so that functions can be conducted in a timely and effective manner. Capabilities and equipment for the AEOC should include:

- Laptop computers with wireless capabilities
- Microsoft Word for data collaboration
- Telephones
- Two-way radios
- Internet access
- Various monitors for data display and monitoring of both national and local television newscast
- Generator
- Emergency Operating Vital Records [DOE O 151.1C, CRD 4.e.]

PS-EM maintains a support trailer with supplies to stand up a make-shift EOC in the event Buildings 48 and 76 cannot be used. The support trailer can be used on site or transported to an off-site location. Although a specific location has not been determined, several facilities that have been identified (e.g., Building 59 and Building 100/310/400/500). Reference EM-JAID-039 for more information.

5.1.4 Operations Support Center/Joint Information Center

The Emergency Public Information Program can activate the Operations Support Center (OSC) in Building 65; the same location is used for media monitoring and can be transitioned to the Joint Information Center (JIC), if necessary. The following equipment/supplies are located at the EPC:

- Television (satellite-equipped)
- Combination printer/copier/scanner/fax machine
- Printer
- Telephones
- Computer
- Radio
- Folding tables (nine) and chairs

Additional supplies are located in the OSC include, portable easels, flipchart pads, thumb drives, and other administrative supplies, reference EM-PLAN-011 and EM-JAID-030 for OSC and JIC activations and operations.

5.1.5 Communications

LBNL communications occur in a variety of ways. Calls from laboratory telephones for 911 go to UCPD Dispatch as the answering point for 911 calls from the LBNL campus. The UCPD Dispatch Center serves as the Public Safety Answering Point (PSAP) for the LBNL main site, Building 1 and Building 955. All PSAPs are expected to meet the requirements of NFPA 1221. The LBNL phone system is equipped with an e911 system that notes the building and room number when a laboratory telephone is used to dial 911. This helps emergency responders to quickly locate the caller. If a cell phone is used to call 911, any local PSAP may answer the call.

If fire, medical, and hazardous material emergency services are needed, UCPD Dispatch transfers the call to ACRECC. If a cell phone was used, the answering PSAP will determine what emergency service to dispatch based on the need and location.

Employees that have called 911 from an off-site facility, which is answered by the local PSAP, are asked to follow up with a call to 6999. This will activate the laboratory's emergency response system. Reference Appendix E for the laboratory's emergency response system. Employees on site or off site also use 6999 to report non-life threatening incident and emergencies to 6999. This number is answered by UCPD, who will then notify the LBNL Duty Officer.

5.1.6 Medical Facilities

The Laboratory has a medical facility for response to medical emergencies and for the establishment of an Occupational Medicine Program that covers occupational therapy, worker's compensation, and sick leave administration. Health Services staffs a full-time doctor, a laboratory technician, x-ray technician, and two nurses. Medical is located in Building 26.

5.2 Emergency Equipment

Emergency equipment and supplies are readily available and operable to meet the credible emergency hazards that are cited in the EPHS. Several organizations maintain equipment that can be used in the event of an emergency. Each organization is responsible for periodic inspections, operational checks, calibration, preventive maintenance, restocking, and testing of equipment and supplies. Equipment available and maintained at the Laboratory that can be used to mitigate an Operational Emergency is described below.

5.2.1 Communications Equipment

The laboratory has several mechanisms for communications, to include telephones, cellular phones, fax machines, two-way radios, trunked radio systems, individual and site-wide e-mails, or site-wide PA system, LabAlert mass notification system. Additionally, the LBNL website, www.status.lbl.gov and LBNL status line, 1-800-445-5830 are available for communications.

5.2.1.1 Internal Communications

Most communications for laboratory personnel are transmitted via the e-mail system, LabAlert, and/or the PA system. Emergency messages transmitted via the LabAlert or the PA system are pre-approved or are reviewed and approved by the Emergency Manager and/or the Emergency Director. During an Operational Emergency or a change to laboratory operations, www.status.lbl.gov will be updated by the Public Information Officer with new information. Communications between emergency responders occur via radio. BETs, assigned to occupied buildings, are also equipped with radios to communicate with the EOC.

PS-EM conducts testing of the radios and PA system each month in accordance with EM-MANL-001. Notification of reported problems with radios is addressed by PS-EM staff, while repairs of the PA systems are coordinated through PS-Security Systems.

LabAlert (MIR3/WARN vendor), is the site's mass emergency notification system that uses several systems (i.e., telephone, text message, and email) to reach personnel. Notifications may be entered via a web interface, email, or telephone. LabAlert is also used to notify and recall the EMT.

5.2.1.2 External Communications

Most mobile telephone networks operate close to capacity during normal times, and large spikes in call volumes caused by widespread emergencies often overload the systems when they are needed most. The public is discouraged from using cellular telephones in order to maximize the bandwidth available to first responders. Therefore, LBNL emergency responders are augmented with GETS and WPS because telephones or cellular telephones will be used as a primary means of communication during an event.

The GETS is a priority service that increases the probability of call completion on the landline segment of the Public Switched Telecommunications Network (PSTN) when severe congestion and/or disruption conditions exist due to a continuity event/emergency. GETS cards have been provided to specific continuity response personnel and testing occurs quarterly. WPS is a priority-calling capability that greatly increases the probability of completing cellular telephone calls during a national security and emergency preparedness (NS/EP) event.

To provide interoperable communications, the laboratory has purchased a number of satellite phones to use in the event of a catastrophic emergency. These satellite phones can be used when cell towers are overloaded or in the event that the laboratory telephone system fails. There is a cache of satellite phones available in the LOC, in addition to some senior management having satellite phones.

5.2.2 Heavy Construction Equipment

The Facilities Division has a host of grounds maintenance heavy equipment to include a bobcat, backhoe, dump truck, air compressors, concrete saw, and a Stanley Hyd Breaker. Pneumatic tools include jackhammers, clayspades, chipping hammers, star drills, spader, and chipping guns. Mobile equipment includes three generators, fork lifts, a 60-ton Mobile crane, and a pusher unit.

5.2.3 Decontamination Equipment

ACFD maintains a truck for response to hazardous material incidents and are required to maintain a Level 1 Hazardous Materials response capabilities per subcontract no. 7020987. Equipment includes absorbent and containment supplies and advanced operational level tools for a hazardous materials response. Additional resources are immediately available via the automatic aid agreement for the Alameda County Operational Area. ACFD maintains the necessary hazardous materials response capability to include personnel, equipment, and resources to deploy at the first responder operational level as required by 29 CFR 1910.120.

The Radiological Protection Group maintains minimal decontamination supplies for initial response and mitigation, which includes detection equipment, sponges, brushes and soaps for personnel that have potentially been exposed. Minimal decontamination can occur in the Medical Facility located at Building 26 using water and catch basins.

5.2.4 Alarm Equipment

LBNL has a mix of safety, security, and equipment alarms at both on-site and off-site facilities. The following sections outline the various types of alarms.

5.2.4.1 Safety Alarms

Some laboratories are equipped with oxygen deficiency alarms to prevent asphyxiation. EHS identifies processes that may result in potential oxygen depletion and controls are implemented through WPC and risk assessments. Reference PUB-3000, Chapter 29 for more information.

Certain laboratory spaces have toxic gas alarms, and some are monitored by ACRECC. ACRECC is a 24/7/365 dispatch center that continuously monitors alarm status. Alarm connections are made through the building and LBNL fire alarm system so that they transmit “alarm” and “trouble” signals as separate zones, in accordance with NFPA 72. For more information on toxic gas alarms, reference PUB-3000, Chapter 13.

5.2.4.2 Fire Alarms

Normally occupied buildings and most unoccupied buildings are equipped with individual facility fire alarm panels, automatic sprinklers or automatic fixed fire-suppression systems. Upon actuation of any suppression system, a signal will be sent to the on-site Fire Department via the site-wide fire alarm system. Almost all buildings are protected by fire alarm systems that consist of heat detectors and/or smoke detectors, manual pull stations, fire alarm bells, and visual warning devices. These systems will warn building occupants automatically as well as summon the ACFD in the event of a fire.

LBNL’s site wide fire alarm system transmits alarms to the Lawrence Livermore National Laboratory’s (LLNL) Proprietary Supervising Station System via supervised transmission lines. The LLNL system monitors fire alarms for its own site-wide system, the Sandia National Laboratory/California system, Parks Army Training Center system, and LBNL. For the purposes of monitoring LBNL alarms, the LLNL system would be considered a Remote Supervising Station System meeting the provisions of NFPA 72, National Fire Alarm and Signaling Code.

The LLNL system maintains a database of alarm points at all sites and reports as much detailed alarm information as is available from the remote system. During normal working hours, the LLNL Alarms Center (Lab Alarms) monitors the alarms from the various sites, participates in alarm testing for the various sites by acknowledging and validating tests, maintains and updates the database of alarm points, and passes actual alarms to the ACRECC for emergency dispatch. During off hours, ACRECC monitors the LLNL Alarm System, and dispatches emergencies. To avoid unnecessary delay in alarm processing, alarms are automatically sent to ACRECC for emergency dispatch within 30 seconds of receipt at Lab Alarms. This minimum delay allows Lab Alarms to intercept alarm tests and prevent unnecessary emergency dispatch.

5.2.4.3 Security Alarms

LBNL security systems are comprised of Close-Circuit Television (CCTV), security cameras, access card readers, glass-break detectors, “panic” alarms, intrusion detectors, and door contacts. The Physical Access Control System (PACS) is monitored 24/7/365 by SPOs at the Blackberry Gate security station. Upon receipt of an alarm (annunciated audibly and visibly with security alarms prioritized), the SPO acknowledges the alarm on the PACS monitor and dispatches the Security Rover to respond to the alarm location to conduct a preliminary assessment. The Intrusion Detection System (IDS) is also linked to CCTV coverage (within PACS) to automatically display along with the alarm information text.

The main site and off-site locations employ CCTV and security cameras, with coverage typically focused on the entry/exit locations (card reader/biometric reader locations) and any sensitive type equipment or materials. Although live monitoring is not performed at most CCTV locations, the capability is available within PACS. CCTV is recorded on Digital Video Recorders (DVR) with an average storage capacity of three to four weeks before rewriting occurs on a first-in first-out basis.

5.2.4.1 Equipment Alarms

The Facilities Division, Plant Maintenance Technicians (PMTs) monitor alarm equipment, such as earthquake shut-off valves for the gas and water systems at the laboratory.

5.2.5 Rescue Equipment

ACFD has sole responsibility for search and rescue missions at the laboratory, which would include technical rescue, confined space rescue, and general rescue efforts. ACFD maintains inventories necessary for firefighting, rescue, emergency medical, spill containment, and decontamination. Medical supplies include Advanced Life Support equipment and medications, oxygen, backboards, stair chair, head rolls, splints, cervical collars, respirators, medications, and a host of bandages and syringes. For detailed lists, please review the LBNL Baseline Needs Assessment.

The site also maintains a rescue boxes around the site with water, first aid/trauma kits, and other disaster supplies. There are a total of 23 rescue boxes on the main site and at each off-site building; BET Leads are provided with keys. The emergency response supplies within the rescue boxes and trauma kits are maintained by the PS-EM. Additionally, Health Services keeps emergency medical supply lockers outside of and attached to Building 26 in order to assist with the initial triage and stabilization of injured personnel during a multi-casualty incident.

PS-EM has four large cargo containers of additional emergency supplies, which includes water, Meals-Ready-to-Eat (MREs), solar radios, tents, tarps, blankets, personal hygiene items, toiletries, lanterns, flashlights, stretchers, and other equipment for medical triage. There is also a cache of tools, such as axes, bolt cutters, crowbars, saws, pliers, shovels, wrenches, and hammers for search and rescue operations.

5.2.6 Sanitation and Survival Equipment

The laboratory has one eating establishment on site, Building 54. There are also several vending machines located throughout the laboratory, with an additional limited food supply at the LBNL Guest House, Building 23. PS-EM maintains MREs and water in cargo storage containers and rescue boxes.

Most facilities are equipped with water coolers and bottled water. Additionally, the Guest House, Building 23 and Building 48 are equipped with showers and sleeping quarters.

5.2.7 Personal Protection Equipment

The laboratory maintains a host of PPE for eye, face, head, hand, and foot protection. The most basic level of various PPE consists of safety glasses and goggles, face shields, hardhats, safety shoes, gloves, and aprons. PPE is specific to the work being performed, hazards present, and facility of operation. The procurement and use of available and recommended PPE is outlined in Policy in EHS Manual 3000, Chapter 19 and are identified through the work planning and control. Certain facilities are also equipped with eye wash stations, based on the activities and hazards of the facility. The laboratory also possesses respiratory protection equipment when the hazards represent the need, reference Policy 07.07.032.001. Workers are responsible for wearing the appropriate PPE, while Supervisors are accountable for determining worker-required PPE.

5.2.8 Sampling Equipment

There are various types of monitoring equipment at the site, such as the televisions used for media monitoring during an event, equipment used for individual exposure monitoring, such as personnel dosimetry as well as ground, water, and air monitoring when a radiological release has occurred or is suspected.

The Industrial Hygiene group maintains an array of detection and monitoring equipment such as radiation meters, sound meter equipment, aerosol photometer, gauss meter, particle counters, lead analyzer, photoionization air monitor/analyzer, infrared and lead analyzers, ozone detector, velometer, UV radiometer, vibration meter, thermal mass flow meter, gilibrator, broad band field meter, anemometer, magnetometer, gas detectors, rotameters, probes, thermometers, carbon monoxide meters, as well as calibration equipment.

Environmental monitoring equipment consists of field meters (pH, conductivity, oxidation/reduction potential, dissolved oxygen, temperature) that are used to monitor spills caused by various sources, including strong acids and bases and other chemicals. There is a HACH meter used for residual chlorine monitoring that could also be used for monitoring chemical spills; however, chemical test kits and trained personnel are not always available for use of this equipment. Additionally, there is a supply of various sampling equipment available for analytical services to be used for emergency response or recovery.

5.2.9 Firefighting Equipment

As mentioned, the laboratory is equipped with a Fire Alarm Control System for fire detection and most facilities have sprinkler systems and most are equipped with fire extinguishers, as required. Firefighting capabilities include two engines, one brush truck, and a hazardous materials truck. Vehicles and ACFD personnel reside in Building 48, as well as a multitude of equipment; such as tools, nozzles, foam, generators, saws, cutters, crowbars, hydraulic unit, extinguishers, detectors, adaptors, ladders, road flares, sprinkler kits, ropes, straps, in addition to medical supplies, respiratory protection equipment and other PPE. For detailed lists, please review the LBNL Baseline Needs Assessment.

5.2.10 Security Equipment

Security operations for LBNL are operated 24/7/365 by UCPD. During the day shift, there are five SPOs on site; one at each gate and two rovers. Security responds on site with ACFD for 911 calls. Security personnel are at each of the three entrances/exits for the facility and regularly monitor the site through cameras, detection equipment, and eyes-on through roving patrols. PPE for Security includes: gloves, flashlights, facility/gate keys, and badges. There are some hard hats, safety glasses, gloves and facemasks, but these items are not assigned on an individual basis. SPOs have a fleet of vehicles used for patrolling the site and responding to events.

5.2.11 Emergency Power Equipment

Several facilities are also equipped with backup power via generators and/or uninterrupted power supply (UPS) sources. Building 85 is equipped with an emergency generator that has 96 hours of fuel. In addition, the Facilities Division has three portable generators located in Zone 1 of the laboratory. During off-shift hours, personnel have to be recalled for transport and hookup of generators. Locations of emergency and back-up generators are documented in EM-TBLE-007.

5.2.12 Transportation Equipment

Personnel vehicles are allowed on site, but is limited due to a minimum number of parking spots. Transportation equipment is limited and would primarily be needed to transport injured and/or potentially contaminated personnel. As mentioned, ACFD has several transportation vehicles in addition to Protective Services, as well as Facilities Division. The Facilities Division maintains a fleet of cars and pickup trucks. The site also maintains a contract for seven shuttle buses that could be used for mass transit if needed.

5.2.13 Logistics Support Equipment

The laboratory has one eating facility located on site (Building 54) with limited food products in Buildings 23 and 6, as well as a host of vending machines located throughout the laboratory for beverages and refreshments. Building 23 also has lodging and shower facilities. Multiple facilities on site have showers and restrooms.

The Facilities Division maintains building floor plan maps for the site. These maps are available to the ACFD, Protective Services Fire Protection personnel (Field Observers for the EMT), are available on the network to the EOC, with hardcopies maintained in Building 76. These documents have also been identified as essential emergency operating records.

6. EMERGENCY CATEGORIZATION AND CLASSIFICATION

Operational Emergencies are major unplanned or abnormal events or conditions that:

- Involve or affect DOE/NNSA facilities and activities
- Cause, or have the potential to cause, serious health and safety or environmental impacts [DOE O 151.1C, CRD 11.a.(2)(a)].
- Require resources from outside the immediate/affected area or local event scene to supplement the initial response [DOE O 151.1C, CRD 11.a.(2)(a)].
- Require time-urgent notifications to initiate response activities at locations beyond the event scene [DOE O 151.1C, CRD 11].

Operational Emergencies that represent a threat to workers and the public due to the release or potential release of significant quantities of hazardous materials from the laboratory must be accurately and promptly classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity [DOE O 151.1C, CRD 11, 11.a.(1), and 11.b.(1)]. Classification aids in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions [DOE O 151.1C, CRD 11.b.(1)]. Once events and conditions have been categorized and classified, they must be compared with protective action criteria to initiate predetermined conservative on-site protective actions and off-site protective action recommendations [DOE O 151.1C, CRD 11].

6.1 Operational Emergencies, Not Further Classified

Operational Emergencies, once categorized as such, may be noted as Not Further Classified (NFC) or they may require classification if a hazardous material is released. Operational Emergencies, NFC, for LBNL include releases of biological agents/toxins, security events, natural phenomena, mass casualties, and any off-site emergency involving hazardous materials that may impact the laboratory or result in protective actions [DOE O 151.1C, CRD 11.a.(2)]. Fires and explosions that do not cause hazardous material releases, but significant structural damage to DOE facilities with confirmed or suspected personnel injury or death also result in Operational Emergencies, NFC.

Operational Emergencies must be categorized as promptly as possible, and no later than 15 minutes after the event has been discovered or identified [DOE O 151.1C, CRD 11.a.(3). Once an event has been categorized as an Operational Emergency, it must not be downgraded [DOE O 151.1C, CRD 17.b.(4)]. The generic types of Operational Emergencies that could affect LBNL are noted in the table below.

TABLE 3 – OPERATIONAL EMERGENCIES APPLICABLE TO DOE

OPERATIONAL EMERGENCY APPLICABLE TO DOE	
Structure fire or explosion causing significant structural damage or confirmed/suspected personnel injury/death DOE O 151.1C, CRD 11.a.(2)(a)3	Accident causing facility damage with confirmed or suspected personnel injury or death DOE O 151.1C, CRD 11.a.(2)(a)3
An unplanned nuclear criticality* DOE O 151.1C, CRD 11.a.(2)(a)3	Workplace mass casualty events DOE O 151.1C, CRD 11.a.(2)(a)6
Natural phenomena impacts (i.e. wind, flood, wildland fire, earthquake) causing significant structural damage or confirmed/suspected personnel injury/death DOE O 151.1C, CRD 11.a.(2)(a)3	The discovery of radioactive or other hazardous material contamination from past operations that may cause uncontrolled personnel exposures exceeding PAC DOE O 151.1C, CRD 11.a.(2)(a)1
Facility evacuations for actual events requiring time-urgent response by specialist personnel or mutual aid not normally assigned to the facility DOE O 151.1C, CRD 11.a.(2)(a)4	Any accident/incident involving an off-site DOE/NNSA shipment containing hazardous materials that cause initial responders to initiate protective actions at locations beyond the immediate/affected area DOE O 151.1C, CRD 11.a.(2)(d)1
Failures in safety systems that threaten the integrity of a nuclear weapon, component, or test device DOE O 151.1C, CRD 11.a.(2)(d)2	A transportation accident results in damage to a nuclear explosive, nuclear explosive-like assembly, or Category I/II quantity of Special Nuclear Materials** DOE O 151.1C, CRD 11.a.(2)(d)3
Malevolent acts (hostage-taking, sabotage, armed assault) DOE O 151.1C, CRD 11.a.(2)(c) 2 and 3	Actual or potential releases of hazardous materials that could result in significant off-site consequences DOE O 151.1C, CRD 11.b.(1)(a)1
A transportation accident resulting in damage to a Category I/II quantity of Special Nuclear Materials*	An off-site hazardous material release from nearby facility, transportation accident, or utilities accident.
Detonation of an explosive device or threat of a detonation resulting from a confirmed or suspicious explosive device DOE O 151.1C, CRD 11.a.(2)(c)1	Any accident involving an off-site DOE/NNSA shipment containing hazardous materials that cause initial responders to implement protective actions at locations beyond the affected area DOE O 151.1C, CRD 11.a.(2)(d)1
Actual or potential release of a hazardous biological agent or toxin outside of the secondary barriers of a biocontainment area* DOE O 151.1C, CRD 11.a.(2)(e)	An off-site hazardous material event not associated with DOE operations that is observed to have or is predicted to have an impact on a DOE site, such that protective actions are required for on-site workers DOE O 151.1C, CRD 11.a.(2)(a)2

*Not applicable or credible for LBNL.
**Per the Site Security Plan – not a credible threat

6.2 Operational Emergencies That Require Classification

Classification levels for Operational Emergencies include: Alert, Site Area, and General Emergencies. For an Operational Emergency to become classifiable, it must involve the actual or potential airborne release of (or loss of control over) hazardous materials from an on-site facility/activity [DOE O 151.1C, CRD 11.b.(1)]. The classification level is based on the health effect parameters measured or estimated at a specific location. Such emergencies represent, cause, or have the potential to cause the events or conditions described below.

An Alert must be declared when events are predicted, are in progress, or have occurred that result in one or more of the following [DOE O 151.1C, CRD 11.b.(1)(a)]:

- An actual or potential substantial degradation in the level of control over hazardous materials [DOE O 151.1C, CRD 11.b.(1)(a)1].
- The radiation dose from any release to the environment of radioactive material or a concentration in the air of other hazardous material is expected to exceed either a site-specific criterion corresponding to ten percent of the applicable Protective Action Criterion at or beyond the facility boundary, or the applicable Protective Action Criterion at or beyond 30 meters from the point of release to the environment. It is not expected that the applicable Protective Action Criterion will be exceeded at or beyond the facility boundary [DOE O 151.1C, CRD 11.b.(1)(a)1a i-ii and 1.b.(1)(a)1b].
- An actual or potential substantial degradation in the level of safety or security of a nuclear weapon, component, or test device that would not pose an immediate threat to workers or the public [DOE O 151.1C, CRD 11.b.(1)(a)2].
- An actual or potential substantial degradation in the level of safety or security of a facility or process that could, with further degradation, produce a Site Area Emergency or General Emergency [DOE O 151.1C, CRD 11.b.(1)(a)3].

A Site Area Emergency must be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations [DOE O 151.1C, CRD 11.b.(1)(b)]:

- An actual or potential major failure of functions necessary for the protection of workers or the public. The radiation dose from any release of radioactive material or concentration in the air from any release of other hazardous material is expected to exceed the applicable Protective Action Criterion at or beyond the facility boundary. The Protective Action Criterion is not expected to be exceeded at or beyond the site boundary [DOE O 151.1C, CRD 11.b.(1)(b)1].
- An actual or potential threat to the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers in the immediate area, but not the public [DOE O 151.1C, CRD 11.b.(1)(b)2].
- Actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a General Emergency [DOE O 151.1C, CRD 11.b.(1)(b)3].

A General Emergency must be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations [DOE O 151.1C, CRD 11.b.(1)(c)]:

- Actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials to the environment. The radiation dose from any release of radioactive material or a concentration in the air from any release of other hazardous material is expected to exceed the applicable Protective Action Criterion at or beyond the site boundary [DOE O 151.1C, CRD 11.b.(1)(c)1].

- Actual or likely catastrophic failures in safety or security systems threatening the integrity of a nuclear component that may adversely impact the health and safety of workers and the public [DOE O 151.1C, CRD 11.b.(1)(c)2].

6.3 Emergency Action Levels

The EALs are a set of specialized decision-support tools designed to assist with rapid emergency decision-making to support initial rapid communications, initiation of preplanned local response, and the protection of the on-site and off-site populations in the event of an Operational Emergency. The IC and Emergency Manager are responsible for using the EALs to determine the appropriate response levels, Protective Action Plan, and notifications. The Emergency Manager uses the corresponding Protective Action Plan in conjunction with information from the scene provided by the IC to categorize and classify the event. EALs, to the maximum extent possible, contain specific, predetermined, observable criteria (indicators) that are used to detect, recognize, and determine the emergency classification.

The EPHAs provide the necessary information for development of the EALs for Operational Emergencies requiring further classification. Specific values or conditions that indicate when a Protective Action Criterion (PAC) may be exceeded at a building/facility or site boundary define the EAL. For readily recognizable events that have the potential for causing a release of hazardous material and the actual release would be difficult or impossible to confirm, the recognition or observation of the event becomes the EAL, and the event classification is based upon the maximum consequences determined in the EPHA.

7. EMERGENCY NOTIFICATIONS AND COMMUNICATIONS

Protective Services has various tools for use in receiving and transmitting information and emergency notifications. The laboratory is equipped with a hill-wide PA system, telephones, trunked radio system, email, fax, and internet to aid in transmission of necessary communications. Additionally, laboratory personnel that are part of an emergency response team typically receive cell phones or satellite phones, to supplement emergency communications and notifications. GETS and WPS is also provided for members of the EMT.

Emergency Management monitors local weather reports, special events, ACFD and UCPD radios, BET radios, Occurrence Reporting and Processing System (ORPS) notifications, and 911 calls for events that could potentially require activation of the EOC.

The Emergency Public Information (EPI) Program has been established as part of the EMT to provide applicable (accurate, candid, and timely) information (primarily emergency information) to site employees, the public, the media, State of California agencies, and local jurisdictions, as well as DOE/NNSA and other federal officials. This information is provided to LBNL employees and other stakeholders within the constraints of privacy, classification, proprietary information, or other associated restrictions consistent with requirements of the FOIA and the Privacy Act.

Public Affairs personnel are the lead organization for coordinating communication with employees and other stakeholders and serve on the EMT. In conjunction with the DOE's information program (i.e., DOE Intranet homepage, periodic broadcasts, and a toll free 800 number), national and local media sources, and various websites, Public Affairs representatives will provide accurate, candid, and timely information to LBNL employees and other stakeholders to establish facts and avoid speculation regarding continuity event conditions, LBNL-specific response actions, and the status of LBNL operations [DOE O 151.1C, CRD 16 and DOE G 151.1-3, P/E 14.1a.]. Communications effectiveness is achieved if relevant information is communicated to LBNL employees and stakeholders as soon as possible after the initiation of an event, as well as, during and after the event.

EM-PLAN-011 and EM-JAID-030 address the provision of information prior to, during, and after a declared Operational Emergency and/or continuity event and provides a methodology for informing employees and the public of emergency plans, pandemic information, and protective actions, before, and during emergencies.

Although it is important to provide accurate information to LBNL employees and other stakeholders during emergencies, it is equally important to communicate expectations and responsibilities before the onset of the event. Emergency Management and Public Affairs use the LBNL Intranet to communicate information. Additional sources of information include the management chain of command, general awareness training, and system-wide e-mails.

Public Affairs provides the site with operational status information (i.e., early dismissal, site closure, etc.) for subsequent transmission to site and will use the local media, system-wide Level 1 emails; the LBNL website, www.status.lbl.gov; the status line 1-800-445-5830; PA system announcements; and telephones (work, home, and cellular).

It is the responsibility of each LBNL employee to understand the communications process, lab operational status, and when and where they are to resume work. All employees are to review and update their personal contact information in the Human Resource Information System (HRIS) and ensure their supervision has contact information in order to facilitate communications in the event of impacts to lab operational status.

7.1 Notifications

Emergency notifications can occur a variety of ways at the laboratory. First and foremost, emergency notifications are generated from various automatic safety alarms (i.e., oxygen depletion, toxic gas, and fire system). Once an alarm is received, a first responder is dispatched for investigation. These alarms provide warning to individuals in the vicinity so that the appropriate protective action(s) can be taken. Other notifications are triggered manually by personnel experiencing an emergency. Laboratory personnel have been trained to call 911 for life-threatening emergencies and 6999 for non-life threatening incidents and abnormal events.

UCPD Dispatch is staffed 24/7/365 to continuously monitor and receive 911 emergency calls and calls to 6999 from the laboratory. Off-site locations that call 911 are received by various local Public Safety Answering Points (PSAPs), which are answered by trained dispatchers who deploy the nearest first responder. Laboratory employees at off-site locations that have contacted 911 are encouraged to also notify 6999 as soon as it is safe to do so. When UCPD receives calls to the 6999 extension, the LBNL Duty Officer is notified so that the appropriate laboratory response assets are activated.

Emergency notifications regarding Operational Emergencies must be made promptly with accurate information to emergency response personnel/organizations, workers, appropriate DOE officials, and other federal, state, and local organizations and authorities. The Emergency Manager uses the EALs and Protective Action Plans to complete initial categorization/classification, communicate protective actions to laboratory personnel, recall the EMT, and notify DOE HQs and other off-site agencies using EM-ERO-001.

The Emergency Manager will use LabAlert or the PA system to communicate the protective action. This is followed by notification to DOE HQs within 15 minutes of the declaration of an Alert, Site Area Emergency, or General Emergency and within 30 minutes for Operational Emergencies, NFC [DOE O 151.1C, CRD 12.b]. Other organizations (e.g., state and local agencies) must be notified within 30 minutes for any type of Operational Emergency [DOE O 151.1C, CRD 12.c and 12.d], which will include protective action recommendations.

Once the EMT is recalled, the Emergency Manager provides a briefing to the Emergency Director, who has the authority to commit LBNL resources, as necessary. BSO officials are responsible for contacting DOE HQs following the initial notification via EM-ERO-001. These actions constitute the activation of the LBNL CEMP.

Accurate and timely follow-up notifications continue throughout the Operational Emergency as conditions change, if the emergency classification level is upgraded, and when the emergency is terminated [DOE O 151.1C, CRD 12]. Follow-up emergency notifications and termination of the emergency are communicated from the EMT via periodic submission of EM-ERO-001 and the EOT through submission of the EM-ERO-002 [DOE G 151.1-3 P/E 10.10].

7.1.1 On-Site Notifications

On-site notifications of emergency conditions are developed by the Public Affairs. Operational Emergency or COOP event notifications are provided to on-site organizations, to include personnel at off-site facilities. During emergencies, Public Affairs is responsible for developing and distributing emergency information after gaining approval from the Emergency Director and DOE-BSO [DOE O 151.1C, CRD 16.a.(7)]. This information is shared using a variety of tools, such as LabAlert, system-wide Level 1 emails; the LBNL website, www.status.lbl.gov; the status line 1-800-445-5830; PA system announcements; and telephones (work, home, and cellular).

7.1.2 Off-Site Notifications

In the event of an Operational Emergency, DOE HQs is notified via email, which is followed up with a telephone call from DOE-BSO. Other agencies notified in the event of an Operational Emergency or COOP event includes Alameda and Contra Costa County, Cities of Berkeley and Oakland, and the State of California. Notifications to off-site federal agencies are conducted through DOE-BSO. DOE-BSO ensures that the Director of Public Affairs and the DOE HQs Emergency Manager are informed of emergency public information that is shared and are kept abreast of the Operational Emergency through intermittent telephone calls and submission of the Situational Report, EM-ERO-002 [DOE O 151.1C, CRD 16.a(6)].

7.1.2.1 Departmental Radiological Emergency Response Assets

The RAP Team is a federal asset capable of providing assistance involving an accidental or intentional radiological incident. RAP support ranges from giving technical information or advice over the telephone, to sending highly trained people, and state-of-the-art equipment to the accident site to help identify and minimize any radiological hazards. RAP provides resources (trained personnel and equipment) to evaluate, assess, provide guidance, isotopically identify, search for, and assist in the mitigation of actual or perceived nuclear or radiological hazards. RAP teams would not be involved in recovery and cleanup operations.

RAP Team members stationed at LLNL receive notification from DOE HQs through ACRECC. RAP resources are recalled, deployed, and led by federal officials. When in the field, RAP Team members exercise the Federal Operations Guide and Federal Emergency Public Information Plan [DOE O 151.1C, CRD 16.c] and are assigned and controlled through, the Federal Radiological Monitoring and Assessment Center (FRMAC). Typically, RAP Team personnel focus outside the site boundary, but can assist on site with radiological issues. RAP interacts with the Department of Health and Human Services. The EHS Division, Radiological Safety Officer and Radiological Technicians are responsible for initial on-site response. In an off-site emergency situation, the RAP Team is responsible for responding, under the direction of the DOE Team Leader, as requested by the DOE/NNSA HQ RAP Coordinator, Region 7, which includes the states of Hawaii, Nevada, and California in accordance with DOE O 153.1, *Departmental Radiological Emergency Response Assets.*

7.1.2.2 Field EOC and Headquarters Operations Center Notifications

Notification to the DOE HQ Watch Office consists of a phone call providing as much information as is known at the time. The same information is documented on EM-ERO-001 and emailed or faxed immediately prior to the phone call. Initial notification information will include as much of the following as possible:

- The classification and categorization of the emergency.
- The description of the emergency.
- The date and time the emergency was discovered.
- The damage and number of casualties.
- Whether the emergency has stopped other facility/site operations or program activities.
- The protective actions taken by off-site personnel or recommended to off-site agencies.
- The notifications made to federal, state, and local organizations.
- The weather conditions at the scene of the emergency.
- The level of any media interest at the scene of the emergency or at the site/facility.
- The contact information of BSO on-scene point of contact [DOE O 151.1C, CRD 12.e.(1-10)].

Communications with DOE HQs is a primary responsibility of the BSO, the EOT in the EOC. As new information is gleaned and decisions are made, situation report updates are provided using EM-ERO-001 and EM-ERO-002. Once an Operational Emergency is terminated, organizations that were made aware of the declaration receive an EM-ERO-001 form noting the event was terminated via email from the EMT.

7.1.2.3 Local City, County, and State Notifications

Alameda County Office of Homeland Security and Emergency Services, California Office of Emergency Services, City of Berkeley Office of Emergency Services, and City of Oakland Office of Emergency Services, and Contra Costa Office of Emergency Services are notified with the same information as DOE HQs via the EM-ERO-001. EMT personnel use email or fax to distribute initial notification of an Operational Emergency and status updates throughout the event. Once an Operational Emergency is terminated, organizations that were made aware of the declaration receive an EM-ERO-001 form noting the event was terminated via email from the EMT.

7.2 Communications

Emergency communications are distributed through a series of tools to assure messages are widely distributed and interoperability of communications is accomplished. As mentioned, Public Affairs uses the PA system, telephone, radios, email, fax, and internet to aid in transmission of necessary communications. Messages can also be communicated through local media if necessary.

On-site, communications are primarily transmitted via landline telephones and cellular telephones. E-mail is widely used across the Laboratory for communication purposes. There are limited facilities with STE capabilities, which can be used for sensitive conversations. The ERO also has extensive use of radios for emergency response activities that can be used with off-site agencies as well. Each of these methods can be used to ensure effective communications occur throughout an emergency, regardless of location, not only for emergency responders, but also the workers and the public [DOE O 151.1C, CRD 12.f and 12.g].

8. CONSEQUENCE ASSESSMENT

Estimates of on-site and off-site consequences of actual or potential releases of hazardous materials must be computed and assessed in a correct and timely manner throughout an emergency. Consequence assessments must be: timely throughout the emergency; integrated with emergency classification and protective action decision-making; incorporated with facility and field indications and measurements; and coordinated with off-site agencies [DOE O 151.1C, CRD 13 and 13.a.(1), 13.a.(2), 13.a.(3), 13.a. (4)]. Provisions must be in place at LBNL to assess the potential or actual on-site and off-site consequences of an emergency [DOE O 151.1C, CRD 13].

To assess consequences (associated with actual or potential hazardous material releases), the EMT has staffed the EOC with the EHS Manager and Protective Actions Unit Leader; both positions are staffed with SMEs who can provide emergency consequence assessment information to crisis decision-makers at an appropriate level of detail, confidence, and accuracy to fit the time frame of the emergency.

These positions provide timely, useful information to the EMT, ICT, and appropriate off-site jurisdictions for use in making informed decisions to protect people (i.e., workers, the public, and responders) during Operational Emergencies at LBNL [DOE O 151.1C, CRD 13.a.(1)]. "Timely" information is information that is provided fast enough so that decisions can be made and implemented in time to avoid or reduce adverse consequences to people. "Useful" information means that the right information, in the correct units, is communicated clearly and effectively. Information includes:

- Immediately upon recognition of the emergency, using readily available tabulated results of consequence calculations conducted ahead of time.
- In the first few minutes of a response, using any available real-time event and meteorological information and conservative predetermined assumptions to fill the information gaps.
- Throughout the event, using continuously refined information.

The Protective Actions Unit Leader will examine data from field response groups. This data may be qualitative (such as reports of visual observations of plume behavior) or quantitative (such as instrument readings from a particular location and time) to identify indications the model needs adjusted or rerun. The Protective Actions Unit Leader will also examine the data for indications that real-world variables are influencing the material transport and dispersal in ways that the model is not able to account for (e.g., plume curvature with simple Gaussian dispersal models or plume rise from buoyant material releases).

Consequence assessment efforts are integrated with emergency classification and protective actions [DOE O 151.1C, CRD 13.a.(4)]. The primary role during Timely Initial Assessment (TIA) is validation of the initial classification and protective actions. After the initial assessment is complete, the team will continue to assess the situation to meet changing conditions and produce more accurate protective action information for the decision-makers. As the Protective Actions Unit Leader continues to gather and analyze data, they may make recommendations to upgrade the emergency classification, as necessary. Although emergency classification should not be lowered once declared, the EHS Manager may identify situations or times when the event consequences do not warrant the current protective action levels. If this occurs, the EHS Manager will make recommendation to the Emergency Director to communicate that the current classification will remain in place until termination; although, current conditions do not require the implemented protective actions.

Exposure criteria are established and available for each type of reentry activity, including search and rescue and repair. CFR and EPA limits are observed for radiological events, such as lifesaving, protection of health and property, and recovery of deceased.

8.1 Continuous Consequence Determination

The consequence assessment process follows a basic pattern.

- Gathering of information about the hazardous materials emergency.
- Applying tools to project the consequences (human health impacts) from a release of that material.

- Comparing the projected consequences to decision criteria for event classification and protective actions for validation or modification.
- Providing results and recommendations to the Emergency Director and Incident Commander, when necessary, in a form that effectively supports crisis decision-making.
- Developing plume models using NARAC [DOE O 151.1C, CRD 13.b, 13.c, and 13.d].

The consequence-based decision-making (CBDM) process consists of the set of choices that are made to minimize the human health impacts from release of hazardous materials and to accurately communicate the level of risk and types of actions that need to occur to prevent or minimize those impacts [DOE O 151.1C, CRD 3.a.(4)]. CBDM is the express purpose of the Protective Actions Unit Leader (the basis for the CBDM); although, the Protective Actions Unit Leader is not (generally) the final authority for emergency decisions. The types of decisions involved are:

- On-site protective actions
- Off-site protective action recommendations
- Event categorization
- Event classification
- Responder safety and health
- Reentry decision-making, planning, and operations
- Recovery planning and operations
- Event termination

8.2 Coordination of Consequence Determination

During an Operational Emergency involving a hazardous material release the ICT and EMT communicate information and relevant data to the California Department of Public Health. The on-site field monitoring teams of Radiological Technicians or Industrial Hygienists provide information to the Protective Actions Unit Leader in the EOC. For radiological events the RAP Team coordinates personnel who are responsible for off-site monitoring assessments and provide information and relevant data to CAL-OES, while the EPA would be recalled for this monitoring assessment if a chemical release occurs.

8.3 Field Monitoring

The consequence assessment process includes field monitoring during a hazardous material release event. ACFD has some limited field monitoring capabilities; however, a more extensive field monitoring capability is provided by the EHS Division through Radiological Technicians for radiation monitoring and Industrial Hygienists for chemical monitoring. Both organizations can provide expert personnel and instruments for a wide array of field monitoring tasks.

Depending upon the type of material involved in the event, the ICT's Radiological Technicians or Industrial Hygienist representative will oversee the survey team with input from the EHS Manager. Prior to deployment, the survey team develops a survey plan and obtains management approval of the plan. The EHS Manager assures that the teams are briefed on facility and meteorological conditions, and exposure control procedures. Teams must also be notified when changes occur within impacting conditions. During survey operations, the EHS Manager:

- Provides directions to survey specific areas.
- Provides directions to minimize hazardous material exposure by exiting high airborne and whole body dose areas (i.e., for radiological materials), or high concentration areas (i.e., for toxic non-radiological materials).
- Sets exposure limits for survey and tracking teams, and solicits and records survey results.
- Allows the teams to use the time necessary to complete surveys.

LBNL chemical and radiological instrumentation may be utilized with regard to chemical and radiological releases and chemical concentrations to support protective actions, reentry and event termination and recovery. The EHS Manager will determine whether, when and where to apply monitoring resources. Additionally, the EHS Manager must make risk-based decisions to determine when valuable data may be retrieved and when the risks of deploying the instrumentation are outweighed by the value of the data.

Consequence assessment activities should include on-site and off-site coordination to afford the most protection for works and the public. Specific areas of interest "key receptors" for consequence assessment activities include site facilities, site boundaries, occupied facilities, emergency assembly areas, evacuation routes, and emergency response facilities. Off-site receptors of interest include population centers, special populations (e.g., hospitals, schools, nursing homes, day care centers, prisons), relocation centers, environmental monitoring stations, and Ingestion Planning Zone (IPZ)-related locations (e.g., water supply intakes, farms, dairies, vegetable gardens, meat animal locations, food processing plants).

Continuous assessments are needed throughout the emergency as more information becomes available (e.g., source term), the event changes (e.g., fire spreads to another building), or environmental conditions change (e.g., meteorological conditions). As control is gained over the emergency and conditions stabilize, consequence assessments continue to support the reentry activities and recovery process. This information is key to identify health and safety concerns and formulate long term protective actions related to environmental contamination.

Late in the event, monitoring capabilities such as soil or captured particulate sampling may be available through the various on-site environmental monitoring programs. Most notably, LBNL has air particulate sampling devices at certain points for environmental permitting purposes. This capability along with other environmental sampling (such as soil sampling) can provide information necessary for emergency termination and recovery, but will generally not be available or retrievable during the earlier phases of the event.

9. PROTECTIVE ACTIONS

Although the EPHS and EPHA processes are designed to identify and analyze the hazards at the laboratory, the ultimate goal of the Emergency Management Program is to enhance the safety of employees, the public, and the environment. If an Operational Emergency or hazardous material release cannot be avoided, protective actions are established to eliminate or reduce the hazards to worker and the public [DOE O 151.1C, CRD 3.a.(2-4) and CRD 3.b.(1)].

Protective actions are consequence-based decisions and must be promptly and effectively implemented or recommended, as needed, to minimize the consequences of emergencies and to protect the health and safety of workers and the public. Once continuous consequence assessment is started and additional information is acquired about the event, including the actual release and status of mitigation of the event, reevaluation of protective actions must continue throughout the emergency and be modified as conditions change [DOE O 151.1C, CRD 14]. The evaluation of habitability for areas being used by responders and sheltered personnel is part of the continuing evaluation for protective actions.

The Emergency Manager will determine the appropriate on-site protective action(s), with the understanding that they may be implemented solely or in any combination, selecting the most effective protective actions to minimize risk to laboratory personnel and those close to the event scene. Specific protection of workers involved in response and clean-up can be found in 29 CFR 1910.120 [DOE O 151.1C, CRD 14.a.(3)].

Protective actions must be predetermined, reassessed throughout an emergency and modified as conditions change and must include [DOE O 151.1C, CRD 14 and 14.b]:

- Methods for controlling, monitoring, and maintaining records of personnel exposures to hazardous materials [DOE O 151.1C, CRD 14.b.(1)].
- Procedures to implement the separate protective actions of evacuation and sheltering of employees [DOE O 151.1C, CRD 14.a.(1) and 14.b.(3)].
- Procedures to account for employees after an emergency evacuation [DOE O 151.1C, CRD 14.a.(2)].
- Methods for controlling access to contaminated areas and for decontaminating personnel or equipment exiting the area [DOE O 151.1C, CRD 14.b.(3)].
- Actions that may be taken to increase the effectiveness of protective actions (i.e., heating, ventilation, and air conditioning (HVAC) shutdown during sheltering) [DOE O 151.1C. CRD 14.b.(4)].
- Methods for providing timely recommendations to appropriate state, or local authorities of protective actions, such as sheltering, evacuation, relocation, and food control.
- Specific protective action criteria for use in protective action decision making [DOE O 151.1C, CRD 14.b.(6)].

- Methods for informing workers and the public of emergency plans and protective actions before and during emergencies [DOE O 151.1C, CRD 16 and 16.a.(1)(c)].
- Methods must also be developed for providing timely recommendations to appropriate state, tribal, or local authorities of protective actions, such as sheltering, evacuation, relocation, and food control; [DOE O 151.1C, CRD 5.a.(1) and 14.b.(5)].

Initial emergency management training is provided through OPS 0010, Safety, Security, Preparedness and Trafficking Persons, and periodic drills are provided for shelter-in-place and evacuation to ensure workers are prepared to take protective actions. This training is required when they are employed, when their expected actions change, or when the emergency plan changes [DOE O 151.1C, CRD 5.a.(1)]. Protective actions supported by the laboratory serve to reduce exposures from a wide range of hazardous material types and include:

- Evacuation - used to move personnel from a hazardous condition to a safe location (i.e., Emergency Assembly Area) [DOE O151.1C CRD 14.b.(2)].
- Lockdown – used when there is an immediate threat involving potential hazards that may result in harm to persons inside or outside of laboratory building(s).
- Shelter-in-Place - used to minimize exposure to dangerous airborne hazardous materials (biological, chemical, radiological, or smoke) [DOE O 151.1C CRD 14.b.(2)].

Laboratory employees receive training on protective actions annually through OPS 0010 training [DOE O 151.1C, CRD 5.a.(2)]. For more information on protective actions, reference EM-PLAN-009.

9.1 Protective Measures

Protective measures are additional actions that promote or compliment protective actions, while enhancing life safety of personnel or enhancing protection of the environment and national assets. Protective measures are recommended by emergency response personnel or qualified personnel and include:

- Relocation
- Personnel Accountability
- Drop – Cover – Hold on
- Run – Hide – Fight
- Deny Entry
- Isolate the Area
- Avoid the Area
- Personal Protective Equipment
- Decontamination of people

- Chelation/decorporation agents
- Medical care
- Ad hoc respiratory protection
- Control of access
- Shielding
- HEPA filtration
- Radiological protective prophylaxis (e.g., administration of stable iodine)
- Control of foodstuffs and water
- Decontamination of land and equipment
- Changes in livestock and agricultural practices

All DOE sites are subject to the basic workplace safety requirement of personnel accountability. Personnel accountability serves two primary purposes during evacuation and emergency response. The first is to assure that search, rescue, and/or assistance efforts can be initiated promptly to provide for the safety of building/facility personnel who may be injured, trapped, or unaware of the emergency condition. A timely and accurate accountability of personnel can prevent initial emergency responders from conducting a needless, and potentially hazardous, search and rescue mission. The second purpose of personnel accountability is to identify the location of personnel to ensure essential functions can continue.

For the purposes of personnel accountability to assist with search, rescue, and assistance efforts, the BET Leads coordinate personnel accountability. This accountability mechanism is used more to determine missing personnel. Accountability for building occupants is initiated when facility-level evacuations occur at the Emergency Assembly Area.

Employee accountability is to be maintained throughout an event to determine who is working, by location and shift; personnel that are available to work, if a recall is necessary to support essential activities or event termination allows the continuation of essential activities and the initiation of tasks that support resumption of normal operations. Employee accountability is accomplished through a functional “roll-up process” (i.e., employees contact their immediate supervisor/manager and provide their work status, the supervisor/manager contacts the department manager with the status of group/section members, the department manager provides employee status to the division manager, who provides the status to the EMT. Each organization should develop and implement an accountability system and long-term communication mechanisms to know the whereabouts of their employees during continuity events, as well as communicate important information.

For the purposes of accurate and expedient accountability, LBNL employees are to:

- Provide supervisors with updated contact information.

- Inform supervisors of location and access method when on travel or leave.
- Check the website and LBNL information line daily for updated information during emergency events.

Adequate measures of personnel accountability enhance the safety of laboratory employees, emergency responders, and allow for communications and additional instructions throughout an emergency.

9.2 Termination of Protective Actions

The Command Section formulates and recommends on-site protective actions and off-site protective action recommendations. Based on the recommendations provided by the Emergency Manager, EHS Manager, and Protective Actions Unit Leader, the Emergency Director has the authority to establish, lift, or modify on-site protective actions and off-site protective action recommendations. This information is communicated to on-site personnel utilizing all communication systems available. Off-site protective action recommendations are provided and communicated through the Operational Emergency notification process using EM-ERO-001. The Emergency Director, through the Emergency Public Information element, communicates protective action information to laboratory personnel and local jurisdictions, which then provides ongoing and updated protective action information to the public [DOE O 151.1C, CRD 17.b.(3)].

10. REENTRY

Consequence assessments provide invaluable information for reentry planning. Site receptors and confirmatory field monitoring teams provide input to the EMT for facility habitability determinations, determination of evacuation routes and assembly areas, reentry planning, and consequently termination of emergency response, and recovery planning and activities. Consequence assessments also provide a mechanism to estimate exposures to hazardous materials for reentry and recovery activities [DOE O 151.1C, CRD 17.b.(2)].

Reentry activities occur when a facility or area has been evacuated or closed to personnel access because of emergency conditions and are generally time-urgent to conduct hazard mitigation, damage control, and accident assessment. Reentry of facilities must be planned, coordinated, and accomplished properly and safely. The Incident Commander and EHS Manager have responsibility for identifying reentry activities and planning reentry activities. The Emergency Director has the authority and responsibility to authorize those reentry activities and approve doses/exposures that may exceed occupational or administrative limits. General guidelines are provided for reentry planning, but these activities are event and hazard-specific so they are determined on a case-by-case basis.

Reentry for search and rescue is by necessity very time-urgent; its use and urgency will be determined by the Incident Commander. For hazardous material releases, the EHS Manager uses hazardous material exposure limits to provide recommendations for reentry activities by determining stay-times, exposure criteria, guidelines for controlling exposures, and focusing on the protection of emergency responders.

It is common for reentry to involve entering a facility or affected area in which hazardous materials may have been released. Respiratory protection and other PPE is available at the laboratory to protect workers in contaminated environments and to protect emergency responders during reentry. The EHS Manager recommends respiratory protection and protective clothing based on the hazards present at the laboratory (outlined in the EPHAs and consequence calculations). The potential for inhalation and absorption through the skin is considered for determining reentry PPE. Decisions are based on 29 CFR 1910.120; 29 CFR 1910.132 through 1910.140; and National Fire Protection Association (NFPA) Standards 1991, 1992, and 1999.

10.1 Protective Action Criteria

PACs is a general term for the level of hazardous material impact, thus requiring actions to prevent or limit exposure of personnel. Emergency Management uses PACs for radiological and chemical emergency events. For radiological events, PACs are Protective Action Guides (PAGs). For chemical events, PACs come from several sources such as Acute Exposure Guide Limits (AEGL), Emergency Response Planning Guidelines (ERPG), or Temporary Emergency Exposure Limits (TEEL).

10.1.1 Radiological PAGs

Per DOE O 151.1 C, the PAGs are used for protecting the public during the early phase of response after a radiological incident. For the EPHA, 1 rem Total Effective Dose Equivalent (TEDE) will be used as the PAC for evaluating severity of radiological material release events. The TEDE is the sum of the 50-year Committed Effective Dose Equivalent (CEDE) from all internal radiation pathways (i.e., inhalation pathway in the case of the EPHA) and the Effective Dose Equivalent resulting from the external radiation pathway (i.e., from sources outside the human body). Currently, the PAG value for the early phase response, i.e. the first 4 days, is the same as the previous value, 1 rem TEDE. The Threshold for Early Lethality (TEL) for radiological material will be set to 100 rem TEDE.

10.1.2 Chemical PACs

Two consequence thresholds are used in emergency planning to evaluate the severity of uncontrolled chemical release events, determine the EPZ, and plan for emergency response. The two thresholds are criteria for human health protection concerning different degrees of adverse health effects resulting from chemical exposures. The first threshold is the criterion or the maximum airborne concentration below which it is believed that nearly all individuals could be exposed without experiencing or developing irreversible, disabling, or other serious health effects or symptoms that could impair their abilities to take protective action(s). The second threshold is the criterion or maximum airborne concentration below which it is believed that nearly all individuals could be exposed without the risk of fatal consequences.

The first threshold, if exceeded, would initiate protective actions and is termed PAC. The second threshold is termed TEL in DOE G 151.1-2, for Threshold for Early Lethality. The PAC and TEL are expressed in units of either parts per million (ppm) or milligrams per cubic meter (mg/m^3). Per DOE O 151.1 C, the choices of threshold values in order of preference are the AEGLs, ERPGs, and TEELs. The AEGLs consider adverse health effects associated with acute exposures. Because only a small number of ERPG values have been issued, equivalent ERPG values, called TEELs, have been developed for many chemicals of interest at DOE facilities.

For more information of PACs, please review EM-PLAN-005.

10.2 Emergency Planning Zone

The EPZ defines the geographical area around LBNL that has been identified as potentially being impacted by a classifiable Operational Emergency. Special planning and preparedness activities are necessary within EPZs to reduce potential health and safety impacts from hazardous material releases. Each hazardous facility has an individual, specific EPZ that are all combined to develop a site-wide EPZ. The facility-level EPZs are defined in the applicable EPHA. For the purposes of comprehensive emergency planning, the site-wide EPZ will be used.

10.3 Shutdown of Operations

Shutdown of operations and shutdown procedures are developed and implemented at the individual facility level. Shutdowns that are necessary during an Operational Emergency are approved by the Emergency Director, coordinated by the Security Manager and ICT. If necessary, support is provided by the Plant Maintenance Technician, respective Building Managers, and EHS personnel.

11. EMERGENCY MEDICAL SUPPORT

LBNL has a full medical facility and staff, as well as a fire department with EMT-Paramedic and EMT-Basic personnel. Ambulance services for the treatment of injured personnel are requested through UCPD and provided by Berkeley Fire Department or Paramedics Plus. ACRECC dispatches ACFD, which is staffed with an EMT-Paramedic and three EMT-Basics and UCPD dispatches Berkeley Fire Department for transport allowing for prompt and effective medical treatment [DOE O 151.1C, CRD 15]. As a site with an Operational Emergency Hazardous Materials Program, the site must also prepare for hazardous material releases, medical disasters, or mass casualty events, which require preplanned, documented arrangements with off-site medical facilities to accept and treat contaminated, injured personnel [DOE O 151.1C, CRD 15 and 15.a.(1)]. Potentially radiologically-contaminated patients who are not critical will first be field decontaminated and then transported. If LBNL capabilities are depleted, MOUs exist for the treatment of patients at Alta Bates Summit Medical Center for acceptance and treatment of radiological contaminated, injured personnel [DOE O 151.1C, CRD 15 and 15.b.(2)]. Reference Table 2 for a listing of MOUs.

11.1 On-Site Medical System

Emergency medical treatment of LBNL employees occurs through the ACFD, as they respond to all known site medical emergencies, injuries, and illnesses [DOE O 151.1C, CRD 15.b.(1)]. In addition to ACFD, patients may also be evaluated by Health Services personnel. Health Services provides stabilization of occupational and non-occupational injuries and illnesses, treatment of uncomplicated occupational injuries, and limited treatment of minor acute non-occupational illnesses. Patients that are critical are transported to the appropriate emergency receiving hospital.

11.2 On-Site Medical Staff

In addition to more than 12 firefighters, certified as Emergency Medical Technicians (EMTs) or Paramedics, the primary on-site medical facility is staffed by Health Services includes a physician, nurse practitioners, registered nurses, and administrative staff. Psychologists are available on an as-needed basis through the University of California CARES program. The SOMD has completed training by the

REAC/TS program and drills for other staff have been conducted. All Health Services staff maintains professional licenses/certifications by the respective state boards.

Physician specialty training includes occupational and preventive medicine. Nurse practitioner and nurse specialty training may include occupational health, adult health, emergency medicine and triage and critical incident stress debriefing. All professional staff members who may interact in emergency situations maintain current basic life support training; some also maintain current advanced cardiac life support training. All licensed professional staff maintains current state licenses.

11.3 Medical Supplies and Equipment

Health Services in Building 26 maintains treatment rooms and medical equipment, such as sutures, splints, dressings, antibiotic creams, wheelchairs, a supply of paper gowns and drapes, gloves (nitrile and other), masks, Tyvek coveralls and booties, face shields, eye irrigation kits, emesis basins, sheets and towels, sterile saline, topical antibiotics, to include a stock of Doxycycline for biological emergencies, and Ca-and Zn-DTPA, Prussian Blue for radiological emergencies.

Building 26 is limited in working space and does not have a strong seismic rating. Health Services operates in the clinical setting and is supplied with limited emergency drugs and special equipment for such activities as oxygen delivery, intubations, and intravenous (IV) therapy. Replacement quantities (drugs and other supplies) are ordered by Health Services personnel and are based on daily operation need and historical factors (i.e., past use for this type of clinic and population), as well as current health indicators (i.e., increase in colds/flu) and are not based on regional attack scenarios.

ACFD maintains equipment and qualified personnel capable of performing extrication, rescue, and transportation of the sick and injured. All equipment is maintained in accordance with State of California requirements.

11.4 Communications

Emergency responders for medical are dispatched through UCPD or ACRECC. In addition, UCPD and ACRECC will request off-site emergency services support based on requests from the IC. Ongoing communication with off-site emergency services is accomplished through the IC and/or field responders. Communication with off-site hospitals is facilitated through ACFD unless a mass casualty occurs, which would require support from the LBNL EOC. Patient information communicated between on-site and off-site medical facilities is consistent with the requirements under the Health Insurance Portability and Accountability Act of 1996 [DOE O 151.1C, CRD 15.a.(2)].

12. TERMINATION

The Operational Emergency termination process begins when personnel in charge of the response effort determine it is appropriate to cease response activities and conduct associated notifications. In general, response activities are terminated when the situation has sufficiently stabilized to the extent that the capabilities of the entire ERO is no longer required to manage the situation. Potential threats to workers, the public, the environment, and national security must have been characterized and conditions no longer meet established emergency categorization criteria.

For hazardous materials emergencies, the termination may begin after the source and release has been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions. The reasoning behind any termination decision may receive as much outside interest and scrutiny as the Operational Emergency declaration. Subsequently, the CEMP and implementing procedures provide the Emergency Director with a decision process and criteria for terminating the response phase, releasing the ERO (all or part), and initiating recovery [DOE O 151.1C, CRD 17.b.(1)].

For classifiable Operational Emergencies (i.e., Alert, Site Area Emergency, or General Emergency), the decision to terminate is based on the perceived need for the ERO to remain fully active to monitor or manage the situation. In the case of Operational Emergencies, Not Further Classified, the decision to terminate formally acknowledges that the situation is stabilized and announces that response activity is being terminated or substantially reduced. Event termination criteria for classified Operational Emergencies and Operational Emergencies not requiring further classification are provided in EM-JAID-011 and EM-JAID-012.

The decision to terminate response to an Operational Emergency will be coordinated with the State of California, local agencies, and organizations responsible for off-site emergency response and notification. Formal termination of emergency response to an Operational Emergency event is considered when conditions at the incident scene and other impacted areas are sufficiently well defined and stable and the capabilities of the entire EMT are no longer needed to manage the situation.

Before an Operational Emergency/continuity event is terminated, the following actions must take place:

- Assign/identify a responsible Recovery/Reconstitution Manager.
- Coordinate termination of the response and recovery actions with off-site agencies [DOE O 151.1C, CRD 17].
- Identify any recovery/reconstitution actions necessary to restore the facility and site to normal operations.
- Develop a plan to accomplish identified actions.
- Approval and implementation of the formal recovery/reconstitution plan.

Once the emergency response has been terminated, each activated EMT must submit Final Report information on the emergency response to the Emergency Director [DOE O 151.1C CRD 12.i]. The Final Report will be developed using EM-TMPL-004, jointly with ORPS and Institutional Assurance personnel and PS-EM using the collected emergency response documentation. The Emergency Manager will submit the report through BSO to the DOE Director, Office of Emergency Operations.

All reports and releases are reviewed for sensitivity prior to being transmitted or disseminated to personnel not authorized to access such information [DOE O 151.1C, CRD 12.j]. The termination decision and subsequent notifications that an event no longer constitutes an Operational Emergency marks the beginning of the recovery phase.

13. RECOVERY AND RECONSTITUTION

Recovery and reconstitution is the final phase of the emergency management cycle and consists of the actions taken to return the facility to normal operation after it has been brought to a stable or shutdown condition [DOE O 151.1C, CRD 17.a.(2)]. Recovery continues until the affected facility and any affected areas meet predetermined criteria for the resumption of normal operation or use. Short-term recovery returns vital life support systems to minimum operating standards. Long-term recovery from a disaster may go on for months or even years until the entire disaster area is completely redeveloped, either as it was in the past or for an entirely new purpose.

Recovery requires coordination among appropriate federal, state, and local agencies/organizations and the affected populace [DOE O 151.1C, CRD 17.a.(1)]. General Emergencies that result in the contamination of off-site property, livestock, crops, etc., will require extensive involvement by off-site and federal agencies. Recovery and reconstitution also include provisions for investigation of the root cause of the emergency and the development of corrective action plans to prevent recurrence (in accordance with applicable departmental requirements) [DOE O 151.1C, CRD 17.a.(2)].

13.1 Recovery

Recovery includes both short-term and long-term activities. Short-term operations seek to restore critical services to the laboratory. Long-term recovery focuses on restoring the laboratory to a normal or improved state of affairs. Recovery and mitigation for minor events affecting one facility or a portion of a facility, will be led by the Operations Section Chief and will be accomplished by BETs, Building Managers, Facilities, EHS, and/or Protective Services personnel. For larger events that affect major portions of the site, where recovery and mitigation will be more long-term versus short-term, it is appropriate for the Emergency Director to appoint a Recovery Manager to take the lead in planning and implementing the recovery process as well as mitigation activities for future events.

The Recovery Manager begins planning the recovery effort simultaneous to mitigation efforts and before event termination. This approach expedites the establishment of the recovery team and preparation of the Recovery Plan using EM-TMPL-008. The recovery process is situation-specific and may vary a great deal from one event to another. The Recovery Manager will establish and lead a Recovery Team or teams. The team(s) will develop plans to restore vital systems (e.g., electrical, computer systems, water, and communications) to an operable condition or develop acceptable alternative systems.

Post-incident mitigation activities are those that eliminate or reduce the probability of future events or damage by altering or permanently changing the area that was affected by the incident. Examples may include construction of flood control/storm water retention facilities, and modification or development of more stringent building codes.

13.1.1 Recovery Team

The Recovery Team can be described as an organized team(s) dedicated to accomplishing restoration activities after a declared emergency event. Recovery activities require coordinated efforts of LBNL management and may require off-site agencies. Federal DOE Agencies that may be involved recovery operations include Office of Emergency Operations; the Office of ES&H; the Office of Environmental Management; General Counsel, and the Office of Congressional and Intergovernmental Affairs. Specific recovery requirements and procedures are established on case-by-case basis. It is the responsibility of the ERO to respond to an Operational Emergency; while the Recovery Team's primary focus is to attempt to return the facility or area to normal operations.

As an Operational Emergency Hazardous Materials Program facility, recovery efforts must consider the following provisions when planning recovery activities.

- Notification to persons and agencies involved in the emergency response of the establishment of the recovery organization and the name of the person in charge.
- Evaluation of emergency plans, facility status, etc., to determine if adequate emergency preparedness status can be maintained during degraded facility conditions.
- Establishment of specific facility or system criteria that must be met prior to the resumption of normal operations or use.
- Preparation of plans for the establishment of safe long-term conditions when the assessment indicates that a facility or affected area cannot be safely returned to normal operation or use.
- Identification of required repair and restoration work based on the assessment results.
- Planning for the proper handling and disposal of all hazardous waste generated during recovery activities.
- Establishment of a tracking group to monitor assigned tasks, including developing work packages, scheduling activities, and estimating costs.
- Formation of a procedures review group to determine if specialized procedures are required and should be developed, and to review and approve special procedures.
- Estimation of exposure to hazardous materials and protection of workers and the general public from exposure during recovery activities.
- Dissemination of information to federal, state, and local organizations regarding the emergency and changes to public protective actions, planning for decontamination actions, development of reporting requirements, and establishment of criteria for resumption of normal operations.

For more information on recovery or the recovery team, reference EM-PROC-012.

13.2 Reconstitution

Reconstitution is defined as the process by which personnel resume normal operations from the original or alternate operating facility. During an Operational Emergency, non-essential personnel and personnel that are not expected to respond to the event are typically dismissed from the site or relocated to mitigate any potential life and safety hazards. During recovery, critical infrastructure and facilities will be brought to an operational status first. There may be limited resources (i.e., lack of utility power or damaged facilities) to conduct work so personnel will be introduced in a phased approach, on a case-by-case basis.

14. EMERGENCY PUBLIC INFORMATION

In the event of an Operational Emergency at LBNL, accurate, candid, and timely information must be provided to the workers, the news media, and the public to establish facts and avoid speculation. Coordination of emergency public information must also occur with DOE federal emergency response organizations, state, and local governments, as appropriate [DOE O 151.1C, CRD 16]. Effectiveness is maintained if communications occur prior to an emergency, as well as, during and after such an event. Communications with the public and media and dissemination of emergency public information is accomplished through the Public Affairs Division. In the event of an Operational Emergency, Public Affairs reports to the EOC and may request the OSC or JIC be activated with additional personnel. Reference EM-PLAN-011 for activation of the OSC.

First and foremost, the workers and the public must be informed of emergency plans and planned protective actions before emergencies occur [DOE O 151.1C, CRD 16 and 16.a.(1)(c)]. Facilitation of this activity is accomplished through:

- Develop an Emergency Public Information Plan to document how emergency information will be communicated prior to, during, and after an Operational Emergency [DOE O 151.1C, CRD 16.a].
- Update of the LBNL website and LBNL information line daily for emergency information.
- Identification of personnel, resources, facilities, and coordination procedures necessary to provide emergency public information.
- A program for training and exercises of personnel who will interact with the media [DOE O 151.1C, CRD 16.a.(1)(a)].
- A methodology for informing workers and the public of LBNL emergency plans and protective actions, before and during emergencies [DOE O 151.1C, CRD 16.a.(1)(c)].
- Coordination of public information efforts with state and local governments, and federal emergency response plans, as appropriate [DOE O 151.1C, CRD 16.a.(1)(d)].

Rumor control is accomplished through monitoring of news and social media, as well as contact with the media and members of the public via telephone operators. News coverage is recorded and monitored at the OSC, with OSC administrative staff documenting and forwarding inaccurate or incomplete information to the Public Information Officer for correction in subsequent news releases.

14.1 Emergency Public Information Program

Public Affairs has a designated OSC where LBNL personnel, to include DOE, can conduct necessary briefings and press conferences regarding an Operational Emergency. The OSC is used by LBNL to communicate and disseminate information to the media and the public. If the emergency expands and jurisdiction passes from LBNL to higher-level government agencies, the OSC is equipped to serve as a JIC, where interagency public affairs responders can communicate with news media with the support of LBNL Public Affairs personnel.

In situations involving sensitive information, LBNL will ensure only sufficient publicly releasable information is released to explain the emergency response and protective actions required for the health and safety of workers and the public. This requirement is accomplished through the review of emergency-related information prior to its transmittal to the OSC/JIC. Individual experience and knowledge may be injected into news conference materials, but only in terms of general LBNL information that is readily available to the public.

Emergency public information activities include:

- The DOE/NNSA Director of Public Affairs and the Headquarters Emergency Manager will be informed of all DOE public information actions. These notifications will be made as soon as practicable [DOE O 151.1C, CRD 16.a.(6)].
- Initial news releases or public statements are approved by the BSO official responsible for information review and dissemination. Generic initial news releases, associated with Operational Emergencies, have been approved in advance for immediate distribution. Following initial news releases and public statements, updates are coordinated with the DOE/NNSA (as appropriate) Director of Public Affairs and the Headquarters Emergency Manager [DOE O 151.1C, CRD 16.a.(7)].
- Establishment of an Public Affairs communication systems among Headquarters, BSO, and on-scene locations [DOE O 151.1C, CRD 16.a.(8)].

14.1.1 Operations Support Center (OSC)

Whether or not an incident calls for EOC activation, Public Affairs staff will activate the OSC for the dissemination of news releases and media advisories (and activation of the emergency public information web site, if possible), as well as the planning and coordination of any media briefings. The OSC is equipped with telephones, phone lines for computer hookup, overhead and video projection capability, visual aids, and informational handouts for news media, public address system, copier, fax machine, restrooms, and adequate parking space. The basement of Building 65 near the Blackberry Gate serves as a communication center and work area for LBNL Public Affairs emergency public information staff. For more information on the OSC, reference EM-PLAN-011.

To ensure appropriate coordination of messages and effort, the OSC will also facilitate the functions of an on-site media center to address media questions and concerns. In coordination with the BSO representative, the LBNL OSC will be activated in the event of any emergency at LBNL. Personnel from off-site agencies who are assigned to the LBNL OSC are there to support their own agencies, as well as for the common goal of informing the public of emergency response activities.

The OSC is used for media monitoring and rumor control. The facility is equipped with televisions, telephones, fax machines, computers, e-mail, and internet [DOE O 151.1C, CRD 16.a.(2)]. Media briefings will take place in the main conference room in Building 65. The parking lot just outside Blackberry Gate has also been identified as a suitable alternate location. All off-site, non-lab personnel, including media representatives, must be cleared for entrance at Blackberry Gate. Additional information on the Media Center is also in EM-PLAN-011.

14.1.2 Joint Information Center (JIC)

As a DOE/NNSA Operational Emergency Hazardous Material Program facility, LBNL has provisions in place to establish a JIC, where LBNL and off-site jurisdictions receive, process, and disseminate public information during an Operational Emergency [DOE O 151.1C, CRD 16.b]. The JIC is adequately staffed with personnel trained to serve as spokesperson and news writer; and personnel to provide support in media services, public inquiry, media inquiry, JIC management and administrative activities, and media monitoring. Persons with technical expertise related to the emergency and spokesperson training are also assigned to the JIC. The JIC is established, directed, and coordinated by LBNL-designated JIC Director with direction from BSO.

In the event of an Operational Emergency classified as a General Emergency, the Emergency Director will normally activate the JIC. Some Operational Emergencies that do not require further classification or are classified at levels below a General Emergency (e.g., high profile security events, mass casualty events, etc.) may also require JIC activation if the level of media interest is high. In all cases, the Emergency Director, in concert with BSO and the Public Information Officer, will determine the need for JIC activation.

Following JIC activation, the Media Liaison, who has direct contact with reporters, will document any inaccurate/incomplete information or specific questions from the media and forward these issues to the JIC Director, who works through the Public Information Officer to pass the information to the EOC so that issues can be corrected in subsequent news releases. Based on the type of inaccurate information, the JIC Director may decide to address the issue between scheduled news conferences.

14.1.3 Public Inquiries

During and after an emergency, LBNL communicates and responds to workers and the public through:

- LabAlert, which is a mass notification tool populated with laboratory employee's work location, telephone, and email address. Personnel can also list cell phone numbers to receive texts, which is the quickest means of delivery and retrieval. LabAlert can store various groups or be queried through building occupants to send messages, allowing for staggered releases or implementation of building-specific protective actions.

- LBNL's public web site contains necessary communications about emergency conditions; information is issued to local print, broadcast and digital news outlets, distributed publicly through LBNL's social media site, including Facebook, Twitter, and Google+. Information is shared after being approved by the Emergency Director and BSO and information updates are issued through these same media channels.

- During an emergency, LBNL's Public Information Officer is responsible for rumor control and addresses calls from employees and the public, answering questions based on emergency-specific information officially approved by the Emergency Director and BSO and publicly available information about LBNL. Rumor control staff document all calls, record caller's name, contact information, and questions. Rumor control staff informs the Public Information Officer in the EOC with questions that have not been addressed so responses can be developed and approved.

For more information on sharing information and distribution of public information, reference EM-PLAN-011, Emergency Public Information Plan.

14.1.4 Information Security

The laboratory does not generate, possess, store, or otherwise use classified information and the requirements associated with this type information control and/or protection is not applicable. Additionally, the laboratory does not generate, possess, store, or otherwise use Unclassified Controlled Nuclear Information (UCNI), a form of Unclassified Controlled Information (UCI). The Office of the Chief Information Officer (CIO) specifically states that LBNL employees and affiliates may not create, access, or store this type of information at the site. For more information, please reference Policy 10.08.001.000, *Controlled and Prohibited Information Categories*.

Although the laboratory, namely Protective Services and MC&A, may generate, receive/transmit, store and/or use Official Use Only (OUO) information, the goal is to limit this. Information generated and communicated during an emergency must adequately protect this level of information; and proprietary information in accordance with Policy 10.08.001.002, *OUO Management and Storage Requirements*.

The ERO may also generate or access Personally Identifiable Information (PII) during an event. It is the goal of Protective Services to limit the collection and use of PII and must comply with Policy 10.08.001.001, *Protected Information Requirements*.

Since OUO and PII information can be generated, all employee communications, public announcements, and press releases are reviewed in accordance with the Site Security Plan to ensure that no information is distributed that presents a security risk [DOE O 151.1C, CRD 16.a.(4)]. Information released to workers and the public must be sufficient to explain the emergency response and communicate health and safety information [DOE O 151.1C, CRD 16.a.(3)], but must not pose additional risks by release of the information.

14.1.5 Field and Headquarters Coordination

Public statements, news release, and press releases are approved by the BSO official responsible for emergency public information review and dissemination. Subsequent public statements, news releases, press releases and updates are coordinated through the DOE/NNSA Director of Public Affairs through BSO and the EOT [DOE O 151.1C, CRD 16.a.(7)].

15. EMERGENCY MANAGEMENT PROGRAM ADMINISTRATION

Effective organization management and administrative control of the comprehensive emergency management program is the primary responsibility of the LBNL Emergency Management Program Administrator. The Program Administrator must develop, implement, document, and maintain an effective, integrated Emergency Management Program that is commensurate with the hazards and that addresses the following program elements: program administration, training and drills; exercises; readiness assurance; emergency response organization; off-site response interfaces; emergency facilities and equipment; emergency categorization and classification; notifications and communications; consequence assessment; protective actions and reentry; emergency medical support; emergency public information; and termination and recovery [DOE O 151.1C, CRD 3.b.(3). The individual responsible for administration of the LBNL Emergency Management Program is:

Tonya Petty, Emergency Manager and Continuity Program Manager

Protective Services, Emergency Management

1 Cyclotron Road

Berkeley, CA 94720

The Program Administrator is responsible for development of the CEMP, the ERAP, CRAR, and annual updates, training, drills, exercise programs, the Readiness Assurance Program, emergency management documentation, and coordination of emergency resources [DOE O 151.1 C, CRD 4.a. and DOE O 150.1A, CRD 2.w.]. The Program Administrator has the authority and resources, which are commensurate with assigned responsibilities, and access to senior-level management [DOE O 151.1C, CRD 4].

The Program Administrator is also responsible for identifying positions and assigning individuals with the appropriate authority, knowledge, and training, the responsibility for establishing and maintaining ongoing and effective interfaces with off-site political, technical, fire, medical, security (e.g., local law enforcement), public health, and emergency service officials.

15.1 Emergency Management Personnel

EM currently consists of one manager with three full-time staff members. The departmental functions are organized to facilitate assignment of a team lead to each element of DOE O 151.1C. The Emergency Manager has primary responsibility for Program Administration, ERO, Readiness Assurance, Protective Actions, Notifications and Communication, Termination and Recovery, the Continuity Program, and provides oversight support of all elements to include Training, Drills, and Exercises. Additional responsibilities for the Emergency Manager include the coordination of Damage Assessment Teams (DAT) with the Facilities Division, Hazardous Waste Emergency Coordinator with EHS, and Off-Site Interface. The following table identifies additional staff/positions in the Emergency Management Program.

TABLE 4 –EMERGENCY MANAGEMENT PROGRAM STAFF

POSITION	RESPONSIBILITIES
Emergency Manager/Continuity Manager 1.6	Develop and implement policy for an effective Emergency Management Program in accordance with DOE O 151.1C and Continuity Program in accordance with DOE O 150.1A. Research and Mission Support Integration/Recovery and Reconstitution
Technical Planning Basis 1.4	Technical Planning Basis/Consequence and Risk Assessment/First Responder Preparedness/Emergency Equipment and Facilities/Pandemic/Emergency Medical Support/Beyond Design Basis/Medical Emergency Response Team (MERT)

POSITION	RESPONSIBILITIES
Exercise Specialist 1.3	Exercises/Community Emergency Response Teams (CERT)/Emergency Public Information/Recovery
Training and Drills 1.2 or 1.3	Training and Drills/Records Management/Controlled Documents/Marketing and Campaigns/ /Building Emergency Teams (BET)
Non-Funded Position 1.4 or 1.3	Information Technology/Notifications and Communications/Interoperable Communications/Cyber Security/Security Systems/Emergency Facilities and Equipment

Each position is also a qualified member of the ERO, and supports Off-Site Interface, as well as the Training, Drills, and Exercise elements.

15.2 Budget Process

Resources are acquired, retained, or maintained through the LBNL budget process; as executed by the Office of the Chief Financial Officer (OCFO) Division. Protective Services budget is a mix of programs that receive funding for indirect and direct budgets. The budget for the Emergency Management Program is from the indirect pool and is $819,000 annually. The process for developing fiscal year budgets (non-direct) is described in Policy 11.07.001.000, Financial Management – General Guidelines.

15.3 Document Control

A comprehensive emergency management system is achieved by establishing and maintaining authorities and resources necessary to plan, develop, implement, and maintain an integrated and coordinated Emergency Management Program [DOE O 151.1C, CRD 4]. Essential to the program administration of the Emergency Management Program is documented plans and procedures. The CEMP is flowed down into several procedures to implement the actual program. EM-PROC-016 outlines the controlled document and records management processes.

15.4 Sensitivity Review

Documents require several reviews at LBNL prior to dissemination or before submission. Once an emergency preparedness document (i.e., plan, procedure, supporting program documentation, scenario and assessment) has been developed, it is reviewed, using current guidance, for sensitivity prior to being submitted for publication. For more information on the review and classification of documents, reference the 2015 Site Security Plan [DOE O 151.1C, CRD 4.b].

The sensitivity reviews are conducted by the Protective Services personnel. These reviews are conducted on emergency management documentation and emergency communications (i.e., PA system announcements, web postings, press releases) to ensure sensitive information is not released to the public and that OUO information is marked accordingly. DOE-BSO also reviews this type of information and provides guidance. Appropriate DOE guidance should be used to make determinations.

15.5 Emergency Operating Vital Records

The Emergency Management Program Administrator is responsible for assuring that emergency operating records are compiled, maintained, updated, and protected on site and are retrievable at an alternate location. These records must be easily retrievable and updated at least annually. Additionally, these records must be protected in accordance with EM-JAID-047 for the assigned level of classification.

Vital records, regardless of media, essential to the continued functioning or reconstitution of operations at LBNL must be available during and after emergencies [DOE O 151.1C 4.e]. EM-TBLE-002 identifies vital records and EM-PROC-16 outlines the vital records program for emergency operating records.

16. TRAINING AND DRILLS

The goal of the Emergency Management Training Program is to assure that personnel are prepared to respond to, manage, mitigate, and recover from emergencies involving the hazards associated with LBNL facilities and operations. A comprehensive, coordinated, and systematic training program has been established and documented to accomplish the emergency management training goals. The program applies to emergency response personnel and organizations that the site expects to respond to on-site emergencies. In addition, the program includes general training that is provided (for all LBNL personnel, subcontractors, and visitors) upon employment, when expected actions change, and when the emergency plan changes. General training is also provided to off-site responders on hazards and specific response actions in the event of an emergency at LBNL [DOE 151.1C, CRD 5].

The Emergency Management Program has overall responsibility to provide emergency training to prepare the ERO for an emergency/crisis situation at the laboratory. In addition to LBNL-specific ERO courses, some ERO members are required to complete certain NIMS/ICS courses, as necessitated by their ERO position.

Emergency drills are developed, scheduled, and conducted to provide supervised “hands-on” training and validation of training for emergency responders and to provide practical training on interface between site groups (i.e., Health Services, Fire Department, Security, Radiation Protection Group, Public Affairs, and Industrial Hygiene, etc.,) that support emergency response.

PS-EM conducts at least one drill per quarter based on scenarios derived from the LBNL EPHS and EPHAs, upon feedback from actual events, exercise experience, and/or to validate new or revised procedures and equipment or facility changes. EM also conducts drills/exercises to validate the effectiveness of the ERO. ERO training consists of participation in and successful completion of an initial ERO course or refresher ERO course

Each ERO member is required to participate in at least one drill, exercise, or actual event annually to maintain qualification for the ERO. The Limited Scope Performance Test (LSPT) are used to verify and evaluate performance in a single emergency response function or task, by a small group of responders or an individual responder. Drills and exercises are used for collective performance evaluations.

ERO personnel must complete their required training annually during the first quarter of each fiscal year. New ERO members that are assigned to the ERO during the course of the year are required to complete training and participate in position-specific training prior to being a qualified and available member of the ERO.

In addition to specific training provided to ERO personnel, the EM provides general training to all LBNL employees on response actions in the event of an emergency, specifically hazards and protective actions. All subcontractors and visitors are provided similar information through the Site Access Program. Emergency Management personnel also provide first responder training and support other training and familiarization efforts of off-site emergency response personnel for local jurisdictions.

Training must be provided for the instruction of and demonstration of proficiency by all personnel comprising the ERO. This requirement is accomplished when ERO personnel complete assigned ERO classroom courses annually, in addition to participating in position-specific training prior to assignment on the ERO [DOE 151.1C 5.b.(1)]. In addition to ERO personnel completing the required ERO training, each member must participate in drills and/or LSPTs to document individual performance proficiency and/or team performance proficiency.

16.1 Training

LBNL hosts a series of courses through classroom training, Computer-Based Training (CBT), and Internet websites. Courses are maintained in the Berkeley Lab Training (BLT) website. The laboratory's training program is owned by the EHS Division, with a focus on safety training; however, financial and research, as well as employee development courses are also offered through this website. The BLT is complimented with a Work Planning and Control (WPC) system to identify hazards and assign controls (training or PPE) based on activities. Courses for the Emergency Management Program and the ERO are identified in BLT and WPC. A complete list of emergency management and continuity related courses are outlined in EM-PLAN-006.

16.1.1 Examinations

While exams are not required for all training courses, DOE O 426.2 suggests that General Employee Training (GET) include training on the emergency plan(s). PS-EM has developed and implemented OPS 0010 to provide information on the hazards at the laboratory and protective actions to minimize the consequences [DOE O 151.1C, CRD 5.a.(1)], which does include an exam. Other courses that require an exam includes EOC 0009. Other PS-EM driven courses, primarily for emergency response personnel, are developed and delivered in accordance with the EM-PLAN-006.

16.1.2 Instructor Training/Qualification

Qualification requirements for trainers include instructional skills and technical competence/knowledge per PUB-3000, Chapter 24. EM-PLAN-006 provides additional guidelines on instructor qualifications. The Emergency Management Program Administrator documents and approves the experience and knowledge of instructors for topics related to emergency management or continuity.

16.1.3 Off-Site Training Support

DOE O 151.1C requirements implementation of NIMS and ICS. EM utilizes the Federal Emergency Management Agency (FEMA)/Emergency Management Institute (EMI) training website primarily for ICS courses. Training opportunities are also shared within the local emergency management community through various local, state, and federal programs.

Additional off-site training support is available through state and local jurisdictions, which host a variety of ICS and FEMA-related courses. Additionally, the DOE Emergency Operations Training Academy (EOTA) offers emergency management-related training to include courses in the following topical areas:

- NIMS
- Consequence Assessment
- Emergency Notifications and Communication
- Continuity/COOP
- Exercise Controller/Evaluator

EOTA provides several other emergency management and continuity related classes not referenced above. For more information, access the EOTA website at: http://eota.doeal.gov/EOTA/courses

16.1.4 Record Keeping for Training

Training records are maintained by EHS Division in BLT, which is populated with personnel data from the Human Resources Information System (HRIS). Additional training records on hazards and controls are maintained in WPC by project/activity. Training profiles are created in the EHS Training Database based on responsibilities and managed for individual employees by first line supervisors. The EHS Training database provides a mechanism to collect, process, store, retrieve and analyze data for the laboratory's training programs. PUB-3000, Chapter 24 identifies mandatory training requirements and records retention schedules for training records.

16.2 Drills

The Emergency Management Drill Program utilizes training methods that allow ERO personnel to put knowledge into practice in the context of a scenario-based simulation and provides supervised "hands-on" or discussion-based training for members of the ERO. Drills provide practical training to enhance preparedness for ERO personnel who are expected to respond to on-site emergencies [DOE O 151.1C 5.b.(2)]. Qualification requirements for ERO personnel include annual participation in at least one drill (or alternatively an exercise or actual event) during which practical knowledge and skills are demonstrated by the ERO member.

Drills specific to the EMT are conducted by EM personnel. Building evacuation and shelter drills are coordinated annually by the BET Leads and observed by EM personnel. Drills are of sufficient scope, duration, and frequency to assure adequate training for all emergency response functions applicable to the site. The size and complexity of drills will depend on the objectives and scenario. The drills are functional, with a focus on training responders involved in a specific response function. The drills range from hands-on instruction involving one procedure to a multi-organizational, scenario-driven event. Drills are as realistic as possible, using scenarios based on hazards surveys and the hazards assessment, as well as actual facility conditions. For more information on drills, reference EM-PLAN-006.

16.2.1 Record Keeping for Drills

Planned emergency management drills are identified for each fiscal year in EM-SCHD-001. EMT member participation in emergency management drills are recorded in the ERO Matrix. Facility-level shelter and evacuation drills are documented on EM-MISC-003 and maintained as performance metrics. Issues are addressed through the BET Lead and Division Director, if necessary. Drill records are maintained for each fiscal year in accordance with EM-PROC-16.

17. EXERCISES

The goal of emergency exercises is to validate response elements of the Emergency Management Program over a five-year period [DOE O 151.1C, CRD 6.b and 7.a.(2)] as well as test and exercise continuity elements [DOE O 150.1A. CRD 2.u and 2.v)]. Validation includes initiating response to simulated, realistic emergency events/conditions in a manner that replicates an integrated emergency response to an actual event. Planning and preparation uses an effective, structured approach that includes documentation of specific objectives, scope, time lines, injects, controller instructions, and evaluation criteria for realistic scenarios [DOE O 151.1C, CRD 6.b]. Each exercise is conducted, controlled, evaluated, and critiqued effectively and reliably [DOE O 151.1C, CRD 6]. Evaluations are conducted by knowledgeable personnel or SMEs.

PS-EM conducts annual exercises to evaluate emergency response elements and ensure resources are adequate, effective, and that employees are able to implement protective actions as necessary. Each exercise is designed to test and demonstrate the site's integrated emergency response capabilities. Scenario initiators and/or consequences are changed each year to assure that all event categories (i.e., biological, chemical, radiological, security, natural phenomena, etc.) are addressed on a rotating basis. Scenarios are also rotated among facilities that are identified as hazardous in the site EPHA. For more information on exercise planning and conduct, reference EM-PLAN-006.

17.1 Exercise Evaluation and Corrective Action

Exercises are controlled and evaluated with the assistance of on-site and off-site personnel acting in the capacity of Controllers and/or Evaluators. Controllers and Evaluators are assigned specific areas and are provided objectives and specific evaluation criteria for those areas.

Exercises identify specific objectives and evaluation criteria, as well as objectives developed from corrective actions, if applicable. Each exercise is followed by a critique to specifically identify issues, and develop and implement corrective actions [DOE O 151.1C, CRD 6.b]. The Exercise Director reviews lessons learned from previous drills, exercises, and real events to identify corrective actions from previous exercises for verification and validation opportunities.

Issues identified as result of the exercise are documented in the After Action Report (AAR) and Corrective Action Plan (CAP), where corrective actions are ascertained through SME analysis of the problem to identify the root cause through causal analysis process in accordance with PUB-5519 (2). Corrective actions are verified and validated in accordance with EM-PLAN-008.

17.2 Off-Site Exercise Coordination

Annual exercises include site emergency response elements to test and demonstrate effectiveness. Off-site agencies, to include DOE emergency radiological emergency response assets, are invited to participate in site-wide exercises at least once every three years to evaluate integration of emergency response functions [DOE O 151.1C, CRD 6.b.(3) and 6.b.(8)]. BSO personnel participate in or evaluate the site-wide exercise each year [DOE O 151.1C, CRD 6.b.(2)]. External evaluations of exercises is required every three years; however, this evaluation is dependent upon DOE HQs personnel [DOE O 151.1C, CRD 6.b.(1)].

Coordination occurs with off-site organizations that choose to participate in an exercise through transmission of formal e-mails or letters to the off-site agencies/jurisdiction requesting a written response regarding exercise participation. This information is maintained with Exercise Package and documented in the LBNL Exercise Matrix.

17.3 Record-Keeping for Exercises

Planned emergency management exercises are identified for each fiscal year in EM-SCHD-002. EMT member participation in emergency management exercises is recorded in the ERO Matrix. Individual performance for an exercise is evaluated against objectives and evaluation criteria and recorded on individual Controller/Evaluator forms. Status of objective achievement is documented in the AAR, as well as overall exercise performance. Corrective action plans are developed independently of the AAR and identify corrective actions derived from the issues, which are then tracked through implementation. The DOE-approved Exercise Plan (ExPlan), AAR, and CAP compile the Exercise Package and are maintained for each fiscal year in accordance with EM-PROC-16 [DOE O 151.1C, CRD 6.b.(5)].

18. READINESS ASSURANCE

A key objective of the Emergency Management Readiness Assurance Program is transparency and continuous improvement. The Readiness Assurance Program ensures that appropriate and timely improvements are identified and implemented in response to findings and/or program needs. This provides PS-EM with a direction and path forward to maintain an effective and efficient Emergency Management and Continuity Program.

An effective Readiness Assurance Program includes issues, strengths, improvement items, or lessons learned that result from various evaluation mechanisms, such as drills, exercises, assessments, and real events. The status and readiness of the Emergency Management Program is summarized in the development of metrics and annual reporting through the ERAP and the Continuity Readiness Assurance Report (CRAR). CAPs are developed and approved using a graded approach based on the significance of the evaluation mechanism and the consequence of the issue. Implementation and timeliness of corrective actions are based on the functional area and the impact of the issue. For more information on the Readiness Assurance Program, reference EM-PLAN-008.

18.1 Assessments

The Readiness Assurance Program establishes a framework for verifying that emergency plans, implementing procedures, forms, and job aids as well as other resources are adequate by assuring that they are sufficiently maintained, exercised, and evaluated (including assessment and appraisal) [DOE O 151.1C, CRD 7]. In addition, the program verifies that appropriate and timely improvements are made in response to needs identified through coordinated and comprehensive emergency planning, resource allocation, training and drills, exercises, and evaluations [DOE O 151.1C, CRD 7].

Annual self-assessments of the Emergency Management Program elements and continuity are conducted based on requirements and criteria from associated DOE Orders and Guides, primarily DOE O 151.1C and DOE O 150.1 [DOE O 150.1, CRD 2.r]. Emergency Management staff conducts assessments of the 15 emergency management elements (i.e., technical planning basis, programmatic, and response) over a three-year period as documented on EM-SCHD-002. Internal assessment types for the Emergency Management Program includes self-assessments and walkthroughs. External assessments consist of independent or management assessments. Assessment results and issues are documented in the ERAP and CRAR [DOE O 151.1C, CRD 7.a.(1) and DOE O 150.1A, CRD 2.w.].

For information on conducting assessments, refer to PUB-5520 (1) Assurance System Description, which establishes the process for scheduling, planning, conducting, and reporting independent assessments, and EM-PLAN-008, which provides guidance specific to Emergency Management Program self-assessment activities. EM-PLAN-008 also establishes the process for scheduling, planning, performing, and reporting self-assessment activities regarding emergency management and continuity.

18.2 Corrective Action Program

A mechanism for corrective actions provides continuous improvement in the Emergency Management Program and Continuity Program, resulting from implementation of corrective actions for issues and improvement opportunities; derived from all types of evaluations, including internal self-assessments, internal/independent assessments, and external evaluations. Once an issue is identified, PS-EM staff and relevant SMEs develop a corrective action that addresses and resolves the identified problem area [DOE O 151.1C, CRD 7.b.(1) and DOE O 150.1A CRD 2.w]. Identification of resolution may require causal analysis to ensure the root cause is determined, reference PUB-5519 (2) and EM-PLAN-008 for more information.

If the issue is the result of a drill or self-assessment, a formal corrective action plan is not required; however, for exercises, management, independent, or external assessments, and real events, a formal corrective action plan is developed. If the issue is the result of an external evaluation (e.g., EA-33 inspection) or an exercise, a formal corrective action plan is developed and submitted to DOE-BSO. Development of the corrective action plan is performed in accordance with guidance found in DOE O 414.1D, Quality Assurance, and may include the conditions, circumstances, situation, and causal factors that led to the finding. The corrective action plan must include a description of the specific corrective action(s) that will be taken to address the cause of the problem and to resolve the finding.

Completion of corrective actions includes a verification and validation process, independent of those who performed the corrective action, verifying that the corrective action has been implemented and validating its effectiveness in resolving the original finding. A general description of the conduct of an independent corrective action effectiveness review for verification and validation will also be included in the corrective action plan, if one is required [DOE O 151.1C CRD 7.b.(1) and 7.b.(1)(b)].

For corrective actions that address the revision of procedures or training of personnel, the necessary priority is assigned to assure these actions are completed before the next evaluation or assessment [DOE O 151.1C CRD 6.b.(7) and 7.b.(1)(a)]. If corrective actions require more time prior to implementation, interim measures are implemented to limit the hazard or the possibility of emergency response failure. Any interim measures or compensatory actions will be described in the corrective action plan.

Corrective actions derived from issues are tracked using the LBNL Corrective Action Tracking System (CATS), an on-line tool that assists management in the tracking and trending of issues. PUB-5519 (1), Issues Management Program Manual, defines the policy for managing issues through identification and closure. Additional guidance on corrective actions specific to emergency management can be found in EM-PLAN-008.

18.3 Lessons Learned

All organizations at LBNL collect employee feedback and develop lessons learned reports. The Readiness Assurance Program includes a system for Emergency Management to incorporate and track lessons learned from training, drills, exercises, and actual responses. Lessons learned are developed to assure that the knowledge and experience identified through strengths, corrective actions, and improvements is shared with others in the emergency management community (using the DOE complex-wide Operations Experience Program, a web-based application).

A lesson learned may be a "good practice" or innovative approach that is captured and shared to promote repeat application or it may be an adverse practice or experience that is captured and shared to avoid recurrence. Lessons learned are a principal component of continuous improvements. They can reduce the number of problems in the emergency management and continuity subject areas, and improve program efficiencies and effectiveness by exchanging information and experiences with others in the emergency management field.

Lessons learned are identified and shared through the Institutional Assurance Division for LBNL. The Emergency Manager also receives lessons learned from the DOE Lessons Learned from Headquarters to determine applicability. For distribution of lessons learned specific to the ERO, WPC is used. For lessons learned specific to EM or emergency response; the Emergency Manager distributes via email. For more information on lessons learned, reference, PUB-5519 (4), Lessons Learned and Best Practices Program Manual.

18.4 No-Notice Exercises

LBNL participates in a program of No-Notice Exercises, conducted at the discretion of the Director, Office of Emergency Operations, to determine if the site ERO can accomplish selected objectives based on applicable plans, procedures, and/or other established requirements. Site involvement is limited through planning by the provision of trusted agents and must conduct response activities when the exercise is conducted [DOE O 151.1C, CRD 7.a.(4)]. Additionally, the LBNL Exercise Director may, at his/her discretion, conduct a No-Notice Exercise. Guidelines for the development and conduct of NNXs are provided in DOE G 151.1-3.

18.5 Metrics

Emergency Management participates in a program of performance indicators (including performance measures and metrics) to capture and track objective data regarding the performance of the LBNL Emergency Management Program in key functional areas. Currently, Emergency Management tracks the following program metrics [DOE O 151.1C, CRD 7.a.(3)]:

- ERO Staffing
- ERO Training
- ERO Availability
- ERO Drill and Exercise Participation
- Corrective Actions
- EOC Activations
- Building Evacuation Drills
- Emergency Facilities and Equipment Status

18.6 Emergency Readiness Assurance Plan/Continuity Readiness Assurance Report

The ERAP is created annually and provided to BSO by September 30 of each year [DOE O 151.1C, CRD 7]. The ERAP is a documented assessment of the development, implementation, and maintenance of the Emergency Management Program. It is also a planning tool to identify and develop needed resources and improvements. The information in the ERAP provides assurance to BSO and LBNL management, as well as DOE HQs that the LBNL Emergency Management Program is “ready to respond”.

The ERAP must identify what the goals were for the fiscal year that ended (concurrent with the due date for the report), the degree to which these goals were accomplished, and the goals for the next fiscal year. In addition to goals accomplished and goals set, the ERAP must document self-assessment results (significant findings).

The CRAR documents the results of continuity planning and preparedness activities, external evaluations/assessments, exercise after-action reports, corresponding corrective action plans (significant findings), improvements based on the lessons learned program, and summary information about the Continuity Program in sufficient detail to be understood by managers who are not in direct contact with the program.

The CRAR provides assurance to management and DOE HQs that the program is, in fact, ready to facilitate performance of assigned Mission Essential Functions and Essential Support Activities, as well as other obligations, and contains a sufficient level of accurate information and analysis to provide management at all levels with an adequate tool for gauging the readiness of the LBNL Continuity

Program [DOE O 150.1A, CRD 2.w]. The CRAR is also a planning tool to identify and develop needed resources and improvements.

Similar to the ERAP, the CRAR identifies the goals for the fiscal year that ended (concurrent with the due date for the report), the degree to which these goals were accomplished, and the goals for the next fiscal year [DOE O 150.1 CRD 2.w]. Contents of the CRAR may be modified by the BSO, as necessary, to capture specific information associated with other COOP programs in the complex. The CRAR is submitted as part of the ERAP for compliance with DOE O 150.1A and DOE O 151.C.

19. GOVERNING DOCUMENTS

DOE Order 150.1A, Continuity Programs

DOE Order 151.1C, Comprehensive Emergency Management System

DOE Guide 151.1-1-1A, Emergency Management Fundamentals to the Operational Emergency Base Program

DOE Guide 151.1-2, Technical Planning Basis

DOE Guide 151.1-3, Programmatic Elements Emergency Management Program

DOE Order 232.2, Occurrence Reporting and Processing of Operations Information

DOE Order 225.1B, Accident Investigations

DOE Order 414.1D, Quality Assurance

DOE Order 420.1C, Facility Safety

DOE Order 458.1, Radiation Protection of the Public and the Environment

19.1 References

EM-ERO-001, Operational Emergency Notification Form

EM-ERO-002, Situation Report (SITREP)

EM-JAID-001, Emergency Director

EM-JAID-002, Emergency Manager

EM-JAID-003, Operations Manager

EM-JAID-004, Technology Manager

EM-JAID-005, Planning Section Chief

EM-JAID-006, Public Information Officer

EM-JAID-009, Facilities Manager

EM-JAID-011, Termination Criteria for Operational Emergencies Not Requiring Further Classification

EM-JAID-012, Termination Criteria for Operational Emergencies Requiring Further Classification (i.e., Alert, Site Area, General)

EM-JAID-016, Protective Actions Unit Leader

EM-JAID-020, Documentation Unit Leader

EM-JAID-022, Field Observer

EM-JAID-023, Environment, Health, Safety (EHS) Manager

EM-JAID-025, Security Manager

EM-MISC-003, Emergency Management Facility-Level Drill Documentation

EM-PLAN-002, Continuity of Operations Plan

EM-PLAN-003, Infectious Disease Disaster Plan

EM-PLAN-004, Technical Planning Basis Program Plan

EM-PLAN-005, Emergency Planning Hazards Assessment Methodology for Lawrence National Laboratory

EM-PLAN-006, Emergency Management Exercise Program Plan

EM-PLAN-007, Emergency Management Training and Drills Program Plan

EM-PLAN-008, Emergency Management Readiness Assurance Program Plan

EM-PLAN-009, Protective Action Plan

EM-PROC-001, Activate the Emergency Operations Center

EM-PROC-012, Recover from an Operational Emergency

EM-PROC-016, Perform Emergency Management Program Administration

EM-RPRT-001, Emergency Planning Hazards Survey

EM-SCHD-001, Emergency Management Training and Drills Schedule

EM-SCHD-002, Emergency Management Assessment and Evaluations Schedule

EM-TBLE-002, Emergency Operating Essential Records Inventory

EM-TBLE-007, Generator Listing

EM-TMPL-004, Final Report

EM-TMPL-008, Recovery Plan

PUB-3000, ES&H Manual

PUB-3851, Worker Safety and Health Program

PUB-5519 (1), Issues Management Program Manual

PUB-5519 (2), Causal Analysis Program Manual

PUB-5519 (4), Lessons Learned and Best Practices Program Manual

PUB-5520 (1), Contractor Assurance System Description

PUB-5519 (4) Lessons Learned and Best Practices Program Manual

20. DEFINITIONS

Reference EM-TBLE-001, Emergency Management Dictionary

21. TABLES

TABLE 1 – EMERGENCY MANAGEMENT PHASES

TABLE 2 – MAAs, MOAs and MOUs

TABLE 3 – OPERATIONAL EMERGENCIES APPLICABLE TO DOE

TABLE 4 –EMERGENCY MANAGEMENT PROGRAM STAFF

21. APPENDICES

APPENDIX A – LBNL SITE MAP WITH ZONES

APPENDIX B – LBNL SITE AND OFF-SITE FACILTIES MAP

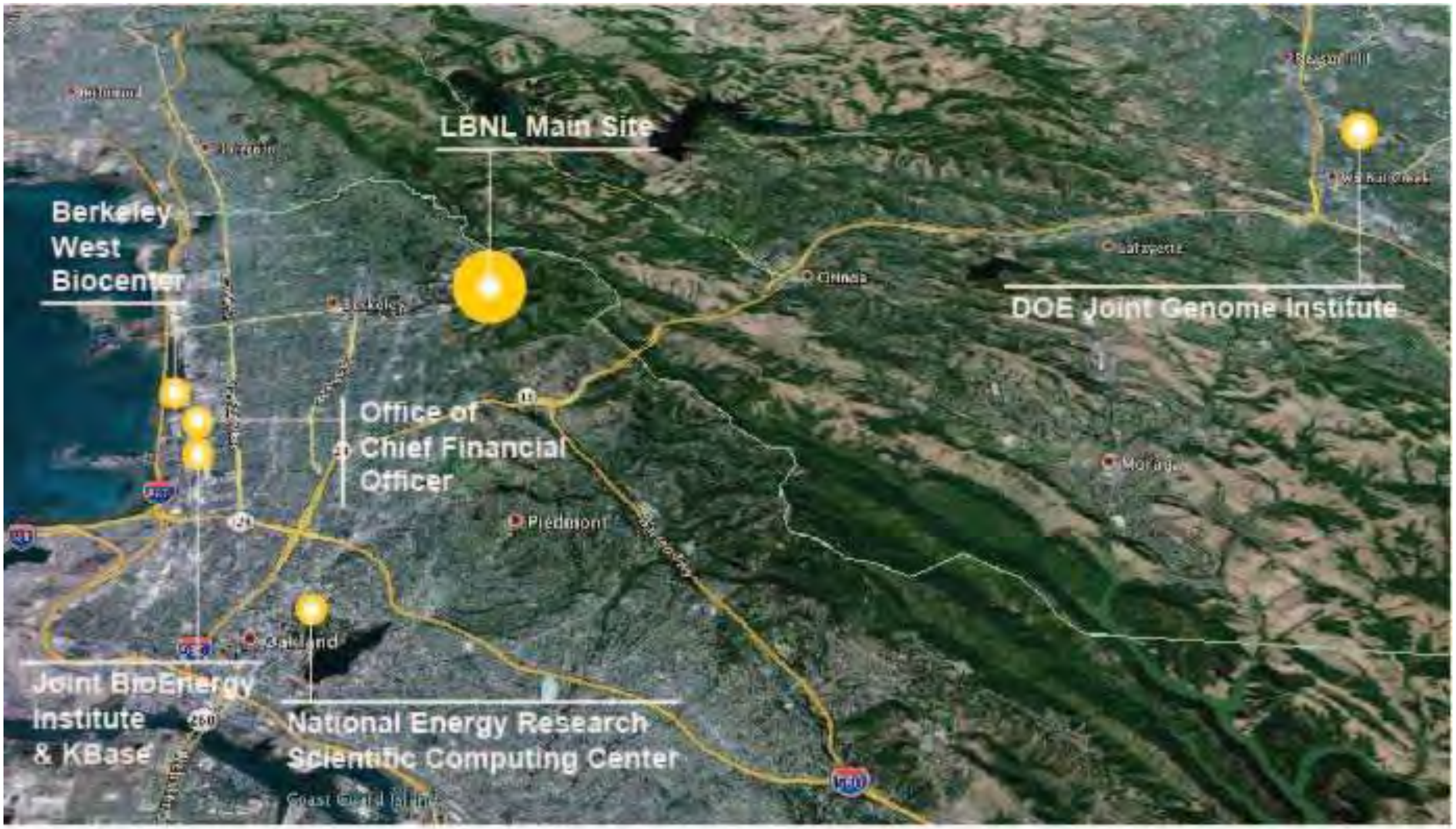
APPENDIX C – EMERGENCY RESPONSE ORGANIZATION STRUCTURE

APPENDIX D – EMERGENCY OPERATIONS CENTER ACTIVATION LEVELS

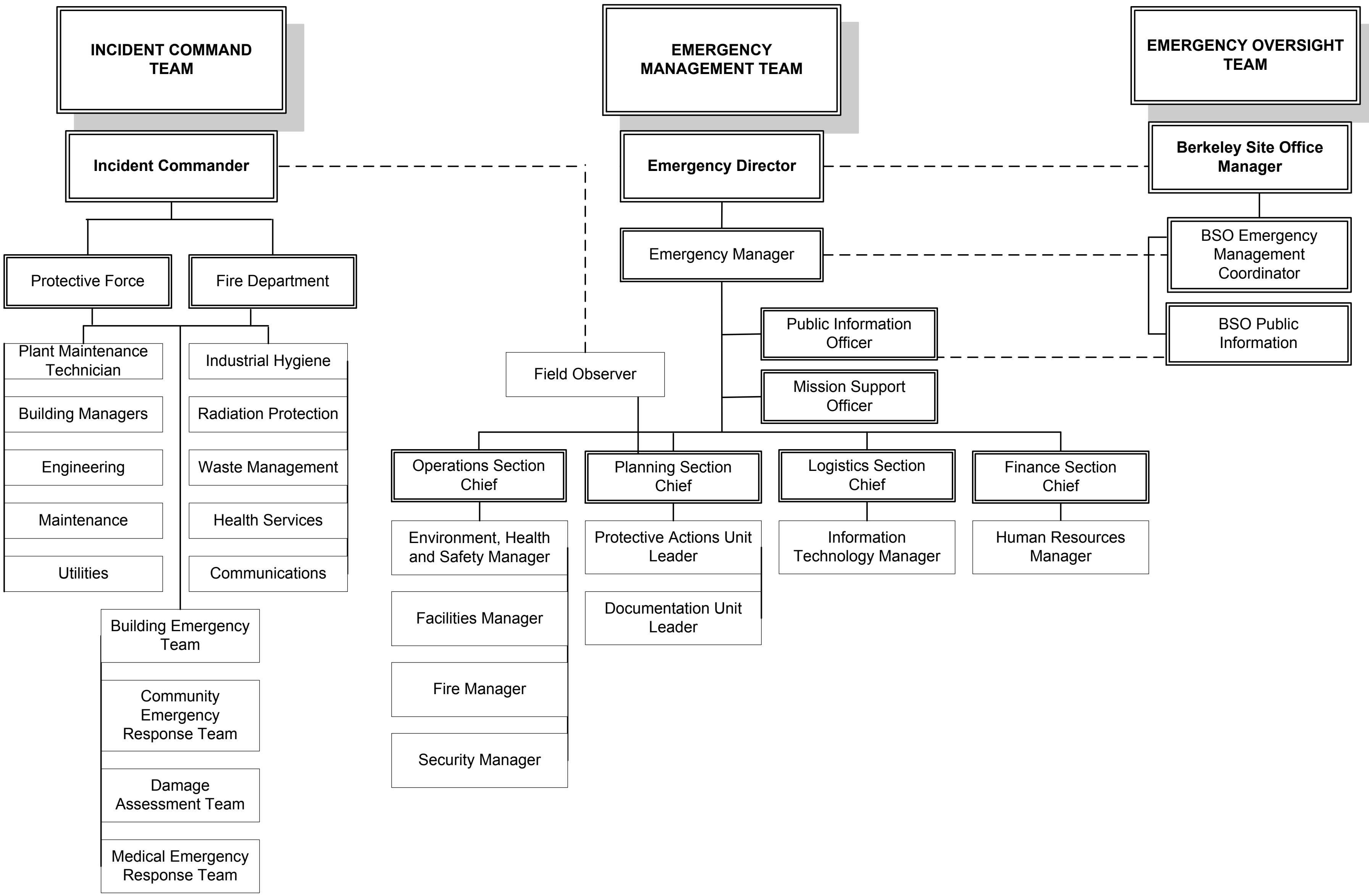
APPENDIX E – EMERGENCY RESPONSE SYSTEM

APPENDIX A – LBNL SITE MAP WITH ZONES

APPENDIX B – LBNL SITE AND OFF-SITE FACILTIES MAP



APPENDIX C – EMERGENCY RESPONSE ORGANIZATION



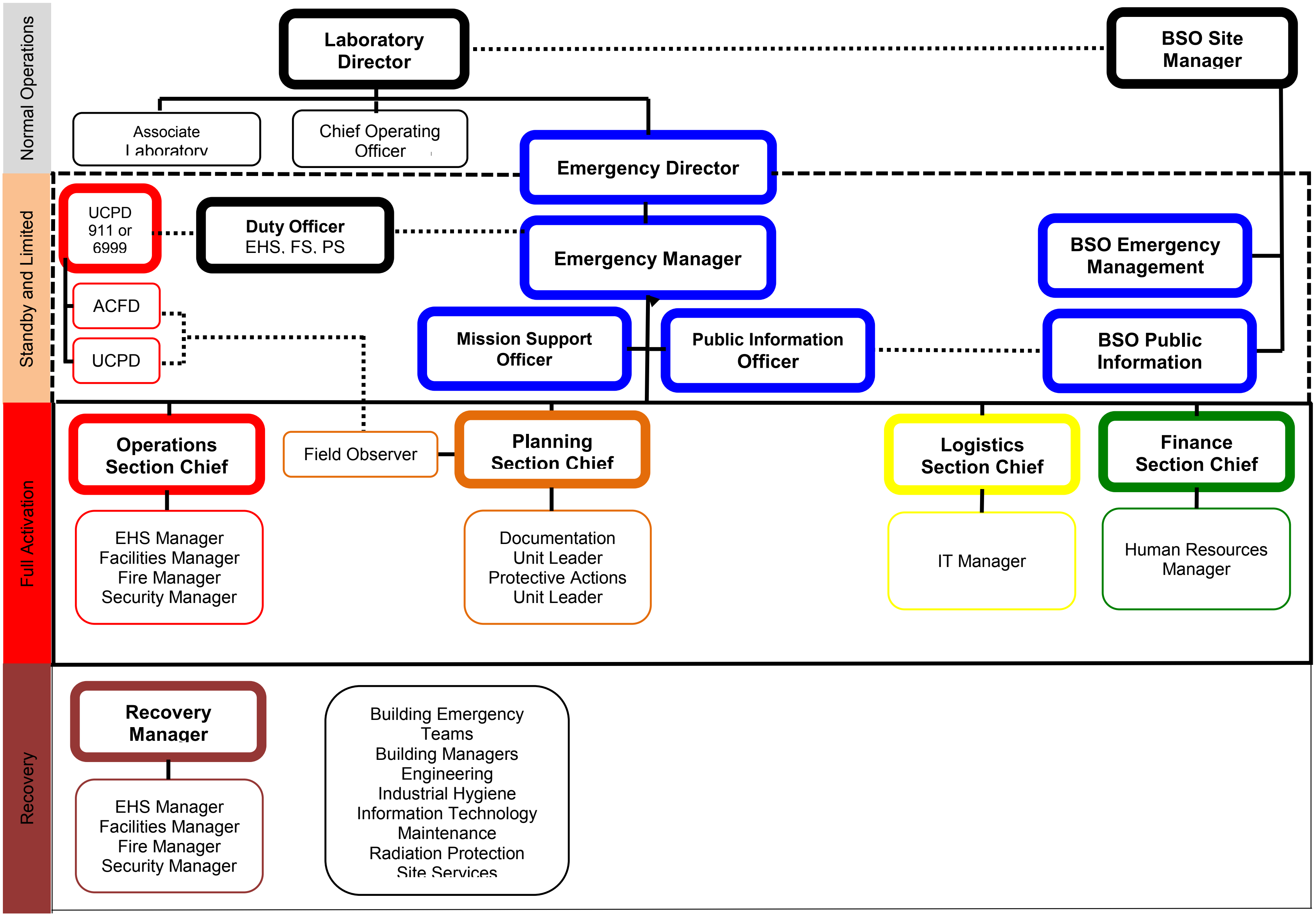
APPENDIX D – EMERGENCY OPERATIONS CENTER ACTIVATION LEVELS

NORMAL **LEVEL 4** Normal Operations	**DAY-TO-DAY OPERATIONS** 10 CFR 851 Worker Safety Monitoring of safety and security alarms Monitoring of local and regional threats Monitoring of ACFD and UCPD radio transmission Monitoring of facility safety through BETs	Public Affairs Information Technology Emergency Management Environment, Health and Safety Facilities Alameda County Fire Department Health Services Protective Force

	EVENT TYPE	**RESPONSE PERSONNEL***
SPECIAL EVENT **LEVEL 3** Standby	VIP Visits National Emergencies Severe Weather Suspicious Packages, Security Threats, Protests 911 Calls 6999 Calls	Alameda County Fire Department Health Services Protective Force Emergency Management Others, as needed
PENDING EVENT **LEVEL 2** Limited Activation	**PENDING EVENTS, ORPS, ACTION PLANNING, RECOVERY** Explosions Exposures/Contamination Fires Injuries Local/Regional Events DOE O 232.2	Emergency Director/Incident Commander Emergency Management Public Information Officer Planning Section Chief EHS, Facilities, IT, Fire, and Security Managers Field Observer Others, as needed
OE, NFC	**OPERATIONAL EMERGENCY, NOT FURTHER CLASSIFIED** Mass Casualty Natural Phenomena Security Event DOE O 151.1 C	Emergency Director Emergency Manager Mission Support Officer Public Information Officer Planning Section Chief Documentation Unit Leader Field Observer Protective Actions Unit Leader Operations Section Chief EHS Manager Facilities Manager Security Manager Fire Manager Logistics Manager IT Manager Finance Section Chief Human Resources Manager
OE **LEVEL 1** Full Activation	**OPERATIONAL EMERGENCY, HAZARDOUS MATERIAL RELEASE** General Emergency Site Area Emergency Alert Emergency DOE O 151.1C	

*Personnel can be recalled upon the discretion of leadership or event type.

APPENDIX E – EMERGENCY RESPONSE SYSTEM



CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)

CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID # 07-000-770310 (1.)	CERS ID (A1.) 10009066	DATE OF PLAN PREPARATION/REVISION (A2.) 2/11/2016

BUSINESS NAME *(Same as Facility Name or DBA - Doing Business As)* (3.)
Lawrence Berkeley National Laboratory - Joint Genome Institute

BUSINESS SITE ADDRESS (103.)
2800 Mitchell Drive

BUSINESS SITE CITY (104.) Walnut Creek	CA	ZIP CODE (105.) 94598

TYPE OF BUSINESS (e.g., Painting Contractor) (A3.) Government Scientific Research Facility	INCIDENTAL OPERATIONS (e.g., Fleet Maintenance) (A4.) Research and Facility Maintenance

THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) (A5.)

☒ 1. HAZARDOUS MATERIALS; ☒ 2. HAZARDOUS WASTES

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) (B1.)
☒ 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
☒ 2. CALLING HAZARDOUS WASTE CONTRACTOR
☒ 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:
1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:
1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) (C1.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☒ 5. ALARM SYSTEM; ☒ 6. PORTABLE RADIO

NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) (C2.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☒ 5. ALARM SYSTEM; ☐ 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:

AMBULANCE, FIRE, POLICE AND CHP	9-1-1
CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550
NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802
POISON CONTROL CENTER	(800) 222-1222
LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)	(C3.) (925) 335-3200
OTHER (Specify): (C4.) LBNL Security	(C5.) (510) 486-6999
NEAREST MEDICAL FACILITY / HOSPITAL NAME: (C6.) John Muir Medical Center	(C7.) (925) 939-3000

AGENCY NOTIFICATION PHONE NUMBERS:

CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545
REGIONAL WATER QUALITY CONTROL BOARD	(C8.) (510) 622-2300
U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193
CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900
U.S. COAST GUARD	(202) 267-2180
CAL/OSHA	(916) 263-2800
STATE FIRE MARSHAL	(916) 445-8200
OTHER (Specify): (C9.)	(C10.)
OTHER (Specify): (C11.)	(C12.)

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and. preventing and mitigating associated harm to persons, property, and the environment.)

D1.

- ☒ 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- ☒ 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- ☒ 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- ☒ 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- ☒ 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- ☒ 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- ☒ 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- ☒ 8. STOP PROCESSES AND/OR OPERATIONS;
- ☒ 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- ☒ 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- ☒ 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- ☒ 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- ☒ 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- ☒ 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- ☒ 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- ☒ 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- ☒ 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☒ 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☒ 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- ☒ 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- ☐ 21. OTHER (Specify): D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY): E1.

- ☐ 1. BELLS;
- ☐ 2. HORNS/SIRENS;
- ☒ 3. VERBAL (I.E., SHOUTING);
- ☒ 4. OTHER (Specify): Building visual and audible alarms for fire and earthquake emergencies E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.) E3.

Primary assembly area: courtyard; Secondary assembly area: open space between animal rescue foundation and our facility along Mitchell Drive.

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

☒ EVACUATION ROUTE MAP(S) POSTED AS REQUIRED E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following) F1.

- ☐ 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- ☒ 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify): F2.

In an emergency, JGI Emergency Response Team (ERT) members coordinate with local emergency response personnel and authorities to familiarize them with the layout of the site, and provide needed response information such as facility layout or the location and properties of hazardous materials at the site. In a medical emergency, the JGI will use the services of John Muir Medical Center in Walnut Creek, a fully staffed hospital providing static healthcare and emergency medical services. Government-owned vehicles located at the JGI or private vehicles will be used to transport injured employees to the medical center. In case of a life-threatening medical emergency, 911 will be used to summon for emergency medical aid and an ambulance. In the event of a fire, 911 will be used to initiate the response of the Contra Costa County Fire Protection District. JGI Building ERT members will only provide initial fire response if the fire is small, and can be safely and quickly extinguished with a fire extinguisher. Waste Accumulations Areas (WAA) are external to the main buildings and have limited quantities of hazardous waste so a building-wide evacuation due to a hazardous materials spill is unlikely. However, if a general evacuation becomes necessary, the Contra Costa County Fire Protection District will respond to the emergency location and assure an orderly evacuation of personnel. Evacuation routes

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., ☒ CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE G1.	LOCATION	CAPABILITY *(If applicable)*
Safety and First Aid	1. ☒ CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2. All spill kits - see facility maps	G3. One time use
	2. ☒ CHEMICAL PROTECTIVE GLOVES	G4. All spill kits - see facility maps	G5. One time use
	3. ☒ CHEMICAL PROTECTIVE BOOTS	G6. WAA spill kits - see facility maps	G7. One time use
	4. ☒ SAFETY GLASSES / GOGGLES / SHIELDS	G8. All spill kits - see facility maps	G9. Reusable after sterilization in an autoclave and thorough washing
	5. ☒ HARD HATS	G10. Assembly Area Emergency Supplies	G11.
	6. ☐ CARTRIDGE RESPIRATORS	G12.	G13.
	7. ☐ SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14.	G15.
	8. ☒ FIRST AID KITS / STATIONS	G16. See facility maps	G17.
	9. ☒ PLUMBED EYEWASH FOUNTAIN / SHOWER	G18. See facility maps	G19.
	10. ☐ PORTABLE EYEWASH KITS	G20.	G21.
	11. ☐ OTHER	G22.	G23.
	12. ☐ OTHER	G24.	G25.
Fire Fighting	13. ☒ PORTABLE FIRE EXTINGUISHERS	G26. See facility maps	G27.
	14. ☒ FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28. See facility maps	G29.
	15. ☒ FIRE ALARM BOXES OR STATIONS	G30. See facility maps	G31.
	16. ☐ OTHER	G32.	G33.
Spill Control and Clean-Up	17. ☒ ALL-IN-ONE SPILL KIT	G34. Building 400 WAA spill kit - see facility maps	G35. One time use for most materials
	18. ☒ ABSORBENT MATERIAL	G36. All spill kits - see facility maps	G37. One time use, universal capability
	19. ☒ CONTAINER FOR USED ABSORBENT	G38. All spill kits - see facility maps	G39. One time use
	20. ☒ BERMING / DIKING EQUIPMENT	G40. WAA spill kits - see facility maps	G41. One time use, universal capability
	21. ☒ BROOM	G42. All spill kits - see facility maps	G43. One time use
	22. ☒ SHOVEL	G44. All spill kits - see facility maps	G45. One time use
	23. ☐ SHOP VAC	G46.	G47.
	24. ☒ EXHAUST HOOD	G48. Fume hoods - see facility maps	G49.
	25. ☐ EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. ☒ CHEMICAL NEUTRALIZERS	G52. WAA spill kits - see facility maps	G53.
	27. ☐ GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. ☐ SPILL OVERPACK DRUMS	G56.	G57.
	29. ☐ OTHER	G58.	G59.
Communi-cations and Alarm Systems	30. ☒ TELEPHONES (Includes cellular)	G60. See Contingency Plan facility maps	G61.
	31. ☐ INTERCOM / PA SYSTEM	G62.	G63.
	32. ☒ PORTABLE RADIOS	G64. Building 310: front desk and Rooms 302 & 355K	G65.
	33. ☒ AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66. Alarm on above ground diesel storage tank	G67.
Other	34. ☐ OTHER	G68.	G69.
	35. ☐ OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply) H1.	LOCATIONS (e.g., shop, outdoor shed, forensic lab)
☒ 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA	Loading docks of Buildings 100 & 400 - see facility maps H2.
☐ 2. PROCESS LINES / PIPING	H3.
☒ 3. LABORATORY	Labs 119, 120, 120A, 121, 122, 139, 140, 147, 331, 412, 413, 415A, 416, 446, 451, 458, &459 - see facility maps H4.
☐ 4. WASTE TREATMENT AREA	H5.

Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply) H6.	LOCATIONS
☒ 1. SHELVES, CABINETS AND RACKS	Designated labs where hazardous materials are handled/stored - see facility maps H7.
☒ 2. TANKS (EMERGENCY SHUTOFF)	Aboveground storage tank - see facility maps H8.
☒ 3. PORTABLE GAS CYLINDERS	Designated labs and gas cage where gas cylinders are handled/stored - see facility maps H9.
☒ 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES	Outside each Building (100, 310, &400) - see facility maps H10.
☒ 5. SPRINKLER SYSTEMS	Throughout Buildings 100, 310, and 400 H11.
☐ 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)	H12.

I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- Material Safety Data Sheets;
- Hazard communication related to health and safety;
- Methods for safe handling of hazardous substances;
- Fire hazards of materials / processes;
- Conditions likely to worsen emergencies;
- Coordination of emergency response;
- Notification procedures;
- Applicable laws and regulations;
- Communication and alarm systems;
- Personal protective equipment;
- Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.);
- Decontamination procedures;
- Evacuation procedures;
- Control and containment procedures;
- UST monitoring system equipment and procedures (if applicable).

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) I1.

☒ 1. FORMAL CLASSROOM; ☒ 2. VIDEOS; ☒ 3. SAFETY / TAILGATE MEETINGS;

☐ 4. STUDY GUIDES / MANUALS (Specify): I2.

☒ 5. OTHER (Specify): Online training courses and as specified in LBNL's PUB-3000, EHS Manual Chapter 24, "EHS Training Program" I3.

☐ 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES

Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) J1.

☐ 1. NO ATTACHMENTS ARE REQUIRED; *or*

☒ 2. THE FOLLOWING DOCUMENTS ARE ATTACHED: J2.

-Facility maps of Buildings 100, 310, and 400

-DOE JGI WAA Contingency Plans (includes maps)

K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED K1.
	2/18/16
NAME OF SIGNER (print) K2.	TITLE OF SIGNER K3.
Jack Salazar	Environment/Health/Safety Deputy Div. Director

LAWRENCE BERKELEY NATIONAL LABORATORY PROTECTIVE ACTION PLAN

Prepared by: Sara R. Wynne — Date: 4/30/14

Reviewed by: Tonya K. Petty — Date: 05/02/2014

Submitted by: Aaron W. Ward — Date: 5/8/14

Approved by: Allen Benitez — Date: 5/9/14

CHANGE SUMMARY			
Issue	**Section**	**Change**	**Description of Change**
001	All		Develop initial plan.

TABLE OF CONTENTS

1 INTRODUCTION

1.1. *Purpose*

The purpose of the Protective Action Plan is to provide actions for Lawrence Berkeley National Laboratory (LBNL or Laboratory) personnel that minimize emergency-related consequences and maximize life safety and health [DOE O 151.1C CRD 14 and 14.b.]. Protective actions are predetermined and based on the potential hazards for the Laboratory identified by the Emergency Management Program. This plan provides a consolidated and systematic approach for the implementation of protective actions and protective measures used at the Laboratory [DOE O 151.1C CRD 14 and 14.b]. The plan is to be used in conjunction with:

- Master Emergency Program Plan
- Building emergency plans

This plan will allow the Laboratory to:

- Identify the actions to be carried out in a building evacuation, shelter-in-place, or lockdown protective action.
- Ensure that employees, affiliates, and visitors know the appropriate actions to take when instructed to evacuate, shelter-in-place or lockdown a building.
- Identify the methods and procedures used to account for employees, affiliates, and visitors.

Hazards for the site include man-made and security events, such as active shooter or terrorist-type threats (i.e., suspicious packages and bomb threats), natural phenomena (i.e., earthquakes or landslides), building fires, explosions, floods, urban wildland fires, and hazardous materials releases, which could be caused by any of the above. This plan will identify protective actions and protective measures based on the hazards at the site and can be implemented at a building level or site-wide.

Although the hazards may be somewhat different for off-site locations under the purview of LBNL, the same protective actions will be used at these locations and any future campus locations. The assumption is that hazards affecting the main site are worst-case scenarios for the potential events and thus planning will be conducted based on site hazards and criteria.

1.2. *Scope*

The scope of the Protective Action Plan applies to the main campus of LBNL, as well as off-site locations. Protective actions are determined and implemented by Laboratory personnel. It does not address additional protective actions and warning systems that may be utilized by federal, state, and local agencies in the area of the Laboratory.

1.3. General Duty Statement

It is the general duty of all Laboratory personnel, regardless of their employer or contracting tier, to take appropriate actions when an unsafe condition has been discovered or reported at their location. These duties include, but are not limited to:

(a) Call 911 to report any life-threatening condition.

(b) Take appropriate actions to ensure personnel safety.

(c) Warn other personnel in the immediate area of the unsafe condition.

(d) Take actions to isolate the unsafe condition, if appropriate.

(e) Assist co-workers and other personnel with implementation of protective actions, especially those persons who need extra assistance, if necessary.

(f) Follow directions provided by emergency response personnel.

1.4. Authorities

Executive Order 12656 provides guidelines for emergency planning and preparedness to ensure sufficient capabilities exist at every level of government. This order also provides guidelines for continuity of government and the performance of essential functions during emergencies. The State of California, Government Code 8630, delegates the authority to declare emergencies and implement actions necessary (i.e., protective actions) for the protection of life and property at the local level.

The Prime Contract (Contract 31) between the Department of Energy (DOE) and the University of California for operation of Lawrence Berkeley National Laboratory states that in the event of an emergency, the contractor can take the necessary action to sustain operations in accordance with all requisite regulations, statutes, etc. The Laboratory has identified the protective actions listed in this plan as being commensurate with the hazards identified for the site.

The Laboratory Director has delegated authority for declaring an emergency and coordination of emergency response and recovery efforts, including determining protective actions, to the Emergency Operations Center (EOC) Manager during an emergency event. The Laboratory Director provides support in establishing priorities and ensures full participation by employees, affiliates, and visitors through the Laboratory Executive Duty Officer (LEDO) during incidents and emergencies affecting the Laboratory.

1.5. Concept of Operations

The decision to initiate protective actions may be made at the building level (i.e., during a fire alarm or active shooter scenario), or through the EOC, based on the emergency. Whether protective actions are initiated at a building level or through the EOC, it is the expectation that all Laboratory personnel will implement protective actions. Some events will allow for preplanning, while others may require immediate implementation.

2 PROTECTIVE ACTIONS

Protective actions are consequence-based decisions and predetermined conservative actions that are promptly and effectively implemented to minimize emergency-related consequences and to protect the health and safety of workers and the public [DOE O 151.1C CRD 14 and 14.b.].

Protective actions for the LBNL site include:

- **Evacuation** - used to move personnel from a hazardous condition to a safe location (i.e., Assembly Area or Reception Area) [DOE O151.1C CRD 14.b.(2)].
- **Shelter-in-Place** - used to minimize the potential threat of exposure to dangerous hazardous materials (biological, chemical or radiological) [DOE O 151.1C CRD 14.b.(2)].
- **Lockdown** - used when there is an immediate threat involving potential hazards that may result in harm to persons inside or outside of Laboratory building(s).

Protective actions are implemented individually or in combination to reduce exposures to a wide range of hazards and scenarios. Protective actions are reassessed throughout the event and are modified as conditions change or as needed [DOE O151.1C CRD 14].

2.1. Protective Action Communication and Implementation

Protective actions can sometimes be implemented at a building level by alarms or personal judgment other times the EOC will identify the need to implement protective actions. As an event unfolds and emergency response personnel are dispatched/respond to the emergency event, more information will usually become available. At this time protective actions are reviewed to ensure that the most applicable protective action has been implemented and to ensure the entire effected area has implemented the protective action.

Building Emergency Team (BET) members assist with the coordination and implementation of protective actions at the building level, while other emergency response personnel assist with implementation of protective actions at the site level.

Regardless of the source of protective action implementation, continuous, effective, and accurate communications must occur throughout the event. This includes communications among on-site and off-site emergency response personnel that have been requested for mutual aid, BET members, and workers who have taken protective actions.

LBNL employees, subcontractors, affiliates, and visitors will be notified of the appropriate actions to take via one or more of the Laboratory's communications channels. The Public Address (PA) system, LabAlert mass notification system, facility alarms, radios, and/or bullhorns may be used to communicate protective actions, as appropriate.

2.1.1. *Implementation of Protective Actions at a Facility Level*

Protective actions may be implemented at any building by sounding of an alarm, in which case emergency response personnel are notified via a public safety dispatch center. In the event of a workplace violence or active shooter hazard, implementation of protective actions may be at the discretion of an individual. It is important for the individual to call 911 if protective actions have been implemented at a building due to alarms or personal judgment. This notification will ensure the appropriate response is routed to the event location.

Other times, emergency response personnel will identify the need to implement protective actions and communicate via one of the methods discussed above.

BETs have been identified for occupied buildings and trained and equipped with personal protective equipment (PPE). These team members will assist with the implementation of protective actions and the conduct of protective measures, including personnel accountability, providing directions and safety guidance, and disseminating information.

2.1.2. *Implementation of Protective Actions at Site-Level*

Protective actions may be needed for numerous facilities or the entire site for hazardous material releases or natural phenomena. The EOC Manager will assess the emergency and announce protective actions using the PA system, LabAlert, or via radios. LBNL employees, subcontractors, affiliates, and visitors are expected to quickly implement the protective action.

Additionally, the EOC Manager will activate the EOC and recall EMT personnel. EOC personnel will continue to monitor the situation, acquiring and validating information, providing situational awareness to emergency response personnel and decision-makers, as well as reviewing protective actions. If protective actions need modified, they will be announced using the methods discussed above.

The decision to evacuate, shelter-in-place or lockdown building(s) depends upon the severity, scope, and nature of the hazard, the number of people affected, and what resources are needed. The EOC is staffed with personnel and subject matter experts (SMEs) that can identify the most effective protective action, or combination of protective actions to maximize safety. Simple, clear notifications will be given to Laboratory employees to optimize safety and cooperation.

2.2. *Protective Action Termination*

Once the event is stabilized and the risks and hazards are mitigated, or emergency response personnel determine that there is no longer immediate risk to personnel, protective actions are terminated. Termination of protective actions is communicated via PA system, LabAlert, radios, and bullhorns. Additionally, the 1-800-445-5830 emergency status number and the main website, lbl.gov, will be updated for those emergencies that impact the site. If personnel have been evacuated from the Laboratory during the event as part of the response to the emergency, communications occur through first-line management/supervisors and Division or Laboratory management, as well as the previously mentioned methods.

Termination and recovery planning efforts will include providing information to federal, state, and local organizations regarding the emergency and possible relaxation of protective actions; planning for decontamination actions, if necessary; as well as completing reporting requirements and criteria for resumption of normal operations [DOE O 151.1C CRD 17.b.(3)]. Recovery planning is event-specific and requires input from Facilities Division personnel for utility and infrastructure issues, as well as Environment, Health and Safety (EH&S) Division personnel for safety guidelines and potential air, land, water, and personnel monitoring if the event involved a hazardous materials release.

3 BUILDING EVACUATION

3.1. Purpose

The Evacuation protective action is used to remove personnel from a geographical area (usually a building) that is either being impacted or is expected to be impacted by an emergency event (e.g., structure fire, explosion, etc.). When a building evacuation is necessary, personnel should evacuate the building and travel to a designated Assembly Area for personnel accountability. Building Emergency Team (BET) Leads assist building occupants with evacuation and once at the Assembly Areas, conduct personnel accountability.

The purpose of using designated Assembly Areas is two-fold:

(a) Assembly Areas provide a designated relocation area to provide safety for evacuees and provide means for accountability during an emergency [DOE O 151.1C CRD 14.a.(2) and 14.b.(2)].

(b) The use of Assembly Areas allows emergency response personnel to collect immediate information about the incident, the building, and the status of personnel.

NOTE: Personnel should know the Assembly Area locations for the buildings where they typically work. BET members can provide personnel with the Assembly Area location(s). For those buildings with building emergency plans, Assembly Areas will be noted.

3.2. Implementation

When a building evacuation protective action is implemented, personnel should take the following actions immediately:

(a) Stop work.

(b) Attempt to secure materials and gather personal belongings, if it can be done swiftly and safely.

(c) Follow directions of BET members, and other emergency response personnel.

(d) Evacuate the building using the safest and fastest route possible, avoiding the area of the emergency condition to the greatest extent possible.

(e) Travel to the safest and nearest Assembly Area, or other suitable location as directed.

(f) Do not attempt to reenter an evacuated building.

(g) Remain at the Assembly Area until given an "All Clear" announcement or emergency response personnel provide other directions.

(h) Provide status information to BET Lead to facilitate personnel accountability.

(i) For an earthquake, perform the following actions:

- DROP to the ground.
- Take COVER by getting under a sturdy table or other piece of furniture. If there isn't a table or desk near you, cover your face and head with your arms and crouch against an inside wall or in the corner of the building, away from windows or anything that could fall. Do not try to run to another room just to get under a table.
- HOLD ON until the shaking stops.
- NEVER take an elevator.
- Do not exit the building during the shaking. Follow steps (b) through (h) above, after the shaking has stopped.

If you are outdoors, find a place away from buildings, trees, and power lines and drop to the ground. If you are in a vehicle, perform the following actions.

- Slow down and turn on emergency flashers.
- Drive slowly to a clear place, if able to do so, and stop.
- DO NOT stop on overpasses, underpasses, or bridges.
- Be careful of overhead hazards such as power lines, trees or falling building debris.
- Turn OFF the ignition and set the parking brake.
- Stay inside the vehicle until the shaking stops, and only if there are no hazards outside the vehicle.

BET members provide leadership, coordinate evacuation actions, and assure (to the extent possible without endangering themselves) that building personnel have evacuated the structure in response to the protective action initiator (i.e., fire alarm, earthquake, etc.).

Once personnel report to an Assembly Area, the BETs facilitate personnel accountability for building occupants, visitors, and others as quickly and accurately as possible using any readily available means. Team members will notify the emergency response personnel, to include the EOC, of missing personnel. With everyone's cooperation a timely and accurate accountability can reduce the need for initial emergency responders (i.e., firefighters) to conduct a potentially hazardous search and rescue mission.

3.3. Alternatives

(a) Assembly Areas are the preferred location for evacuees to proceed to from individual buildings.

(b) If the route to the Assembly Area or the Assembly Area, itself, appears to be unsafe, use judgment and keep moving to a safe location.

(c) All personnel should be cognizant of individuals and coworkers needing additional assistance with evacuations and provide aid if able to do so. It is preferable, however, for employees to seek assistance from coworkers and make appropriate plans prior to an emergency event.

3.4. Limitations

Assembly Areas are not designated to provide shelter from emergency events; they are simply designated locations to assemble employees for accountability [DOE O 151.1C CRD 14.a.(2) and 14.b.(2)].

4 AREA/SITE EVACUATION

4.1. Purpose

Area/site evacuations are event-specific protective actions and more detailed information can be found in EM-PLAN-010. An area or site evacuation to remove personnel from a hazardous area may be initiated as the sole protective action or in combination with other protective actions for several emergency or potentially hazardous situations [DOE O 151.1C CRD 14]. A potential hazardous materials (biological, chemical, or radiological) release, security event, urban-wildland fire, landslide, and earthquake, are examples of emergency conditions where implementation of an area/site evacuation may be necessary.

If an area or site evacuation is ordered, emergency response personnel will make every effort to initiate the protective action in a controlled manner to facilitate rapid implementation. Personnel must follow directions from emergency response personnel to avoid potential delays in evacuation.

5 LOCKDOWN

5.1. Purpose

The Lockdown protective action is used to protect personnel from the potential impact of a workplace violence incident that may result in harm to persons inside or outside of an LBNL building. These events can occur at any time or any place. Law enforcement or the EOC Manager may initiate a Lockdown, or more likely building/site personnel will self-implement this protective action to minimize an intruder's access to personnel [DOE O 151.1C CRD 14.a.(1)].

5.2. *Implementation*

If workplace violence or an active shooter is suspected or confirmed, perform the following actions:

(a) Stop work.

(b) If possible, all staff, affiliates, and visitors must IMMEDIATELY proceed out of the line of sight of windows and doorways to the nearest room or secure space.

NOTE: It is imperative to find cover or concealment away from doors and windows as quickly as possible.

(c) All doors should be locked, and if there is no lock, construct barricades with available objects.

(d) Turn off all lights and electrical devices.

(e) Silence cell phones (including vibrate mode), but leave power on so that automated notification system messages, texts, or email updates can be received.

(f) All window shades or blinds should be closed.

(g) If gunshots or explosives are heard, remain concealed and get positioned as close to the floor as possible.

(h) Remain at the shelter area until given the "All Clear" or are otherwise directed by emergency response personnel.

BET members coordinate response to the Lockdown protective action and assure (to the extent possible without endangering themselves) that building personnel are sheltered in appropriate areas that will maximize their protection. BET members may be requested to facilitate personnel accountability once released from a Lockdown.

5.3. *Limitations*

Active shooter events are unpredictable and evolve quickly, so warning time can be very minimal. Given the unpredictable nature and rapid onset of an active shooter scenario, personnel must take decisive action immediately upon issuance of a warning. Because most incidents are over within minutes, site personnel must be prepared to deal with the situation until law enforcement personnel arrive.

5.4. *Alternatives*

As mentioned, active shooter events are unpredictable and people must take appropriate measures to protect themselves. It is important to be aware of one's surroundings and the environment, as well as any possible dangers. Whether at work or when away from home, note the two nearest exits for any building. As a last resort, "fight" is advised when in imminent danger. Using as much physical aggression as possible, creating an improvised weapon, or throwing items can incapacitate a dangerous individual. If a shooter is in close range and a person cannot hide or flee, the chance of survival is much greater if the shooter can be incapacitated.

6 SHELTER-IN-PLACE

6.1. Purpose

The Shelter-in-Place protective action is used to

(a) Minimize the exposure to an uncontrolled release of biological, chemical, or radiological material(s).

(b) Protect personnel from the potential impact of severe weather (i.e., lightning, heavy rain and flash floods, high winds, damaging hail, landslides).

(c) Other external hazards (i.e., presence of wildlife, protests, etc.)

This protective action is designed to put personnel in the safest location available, in the shortest amount of time, and minimize exposure to an external hazard [DOE O 151.1C CRD 14.a.(1)].

For a hazardous materials release, the goal is to minimize the exposure of the threatened personnel to dangerous biological, chemical or radiological material(s) by increasing shielding. The Shelter-in-Place protective action uses a structure and its indoor atmosphere to temporarily separate people from a hazardous outdoor atmosphere. Personnel may still be in the endangered area, but with some protection from the barrier created by the shelter and the short-term protection of its indoor atmosphere.

For severe weather, Laboratory employees should remain indoors when severe weather is forecasted and seek out the best available shelter. To assist in making this decision, the following list identifies structures by general type and in order of declining level of protection:

- Concrete or hardened facilities
- Vault rooms located in buildings
- Brick buildings
- Cinder block buildings
- Metal construction buildings
- Temporary buildings (modular trailers, trailer houses, etc.).

For buildings without designated shelter areas, the safest place is on the lowest floor, in a small room in the interior portion of the building, (center hallways, restrooms, or closets are often the most reinforced part of a building), away from exterior doors and windows, putting as many walls as possible between the shelter area and the outside of the building to provide additional protection.

Other scenarios that recommend Shelter-in-Place will be communicated when hazards are recognized. The PA System, LabAlert, radios, and bullhorns will be used to communicate the need for this protective action.

6.2. *Implementation*

While the above-mentioned notification systems should provide warning to the vast majority of Laboratory personnel and visitors, each individual must exercise common sense and general safety awareness. For example, personnel working outdoors or traveling around the site in a vehicle should always be aware of their surroundings, especially when storms are in the area. If you are working outdoors or preparing to work outdoors with a storm approaching and you are not aware of any weather warnings, check http://www.weather.gov/, the lbl.gov website, or call 1-800-445-5830. Safety is everyone's responsibility.

NOTE: Personnel should be aware of potential or designated shelter areas (typically an interior room) for the buildings where they typically work. If personnel do not know of an ideal shelter area, ask a BET member for this information, or find it in the building emergency plan for that building.

When a shelter-in-place protective action is implemented, personnel should take the following actions immediately:

(a) Stop work.

(b) Attempt to secure materials, if it can be done swiftly and safely.

(c) Go inside immediately, or stay inside.

(d) If time permits, move to the nearest available shelter area immediately.

(e) Move away from doors and windows.

(f) Remain at the shelter area until given the "All Clear" or are otherwise directed by emergency response personnel.

(g) Implement personnel accountability if directed to do so.

For a hazardous materials release, perform the following actions, in addition to (a) through (g) above.

(h) Close as many interior doors and windows as possible as you move into the inner most areas of the building or structure. (The intent is to place as many barriers as possible between you and the outdoor environment.)

(i) Refrain from eating, drinking, smoking, applying cosmetics, using tobacco products, or chewing gum. Individuals required to take prescription medication should take the medications, if necessary, but are required to notify Health Services following release from a Shelter-in-Place protective action.

CAUTION: In some buildings, shutting down the air handling systems for specific processes may create more of a hazard then leaving the air handling system running. If this is the case, it will be noted in the building emergency plan.

(j) Turn off air conditioning, heating, and air handling units that draw in outside air. Close vents if possible. Review process or building-specific procedures to determine the appropriateness of turning off the air handling system for specific processes [DOE O 151.1C CRD 14.b.(4)].

(k) Take advance measures to reduce infiltration (i.e., placing plastic sheeting over windows and vents, applying tape over electrical outlets, around doors, and other openings to reduce the air flow as much as possible).

(l) Personnel in vehicles should roll up the windows and close vents that draw in outside air, including heaters and air-conditioners, then drive to a safe area that is upwind from the event.

(m) Maximize your safety by minimizing movement within the site.

(n) If personnel attempt to enter your building while you are sheltering, allow them to enter the building or shelter area. However, potentially contaminated personnel must remain segregated to reduce the likelihood of cross-contamination to others in the shelter area.

BET Leads coordinate response to protective action announcements and assure (to the extent possible without endangering themselves) that building personnel have sheltered in appropriate areas and, when applicable, implemented alternative measures to maximize their protection from a hazardous outdoor atmosphere.

6.3. Limitations

Warning time can be very minimal for events warranting a Shelter-in-Place protective action. Hazardous materials releases are unplanned events and often times, substances have no smell and are not visually detectable. It is important to follow instructions provided by emergency response personnel.

Severe thunderstorms may approach suddenly and personnel must take decisive sheltering action immediately upon issuance of a warning. Every effort will be made to continuously update information throughout these types of events.

6.4. Alternatives

Emergency response personnel may use Evacuation in conjunction with Shelter-in-Place to protect personnel (i.e., shelter-in-place initially until the immediate danger has passed and then evacuate impacted personnel). Evacuation of a building, area, or the entire site as a means to move personnel away from a dangerous condition may be the preferable protective action if the emergency situation permits.

7 PROTECTIVE ACTION TRAINING

Implementation of protective actions is dependent upon the situation and is event-specific. Protective actions have been predetermined. Laboratory personnel are trained annually on protective actions through the EHS135 online training course, and drilled annually for Shelter-in-Place and Evacuation protective actions [DOE O 151.1C CRD 5.a.(1) and 16 and 16.a.(1)(c)].

8 PROTECTIVE MEASURES

Protective measures are additional actions that promote or compliment protective actions, while enhancing life safety of personnel or enhancing protection of the environment and national assets. Protective measures include:

(a) **Access Control** - selective restriction of access to a place or resource, and when access is provided, entry and egress is documented.

(b) **Avoid the Area** - used to keep personnel away from a potential abnormal event or emergency condition during the initial response phase.

(c) **Chelation** - a method of removing certain heavy metals from the bloodstream, used especially in treating internal radiation exposure

(d) **Control of Foodstuffs and Water** – recommendation that personnel not eat, drink, apply cosmetics, or take medications to reduce the effects of a hazardous materials release [DOE O 151.1C CRD 14.b.(4)].

(e) **Decontamination** - to make (an object or area) safe for unprotected personnel by removing, neutralizing, or destroying any harmful substance, such as radioactive material or poisonous gas.

(f) **Deny Access** - restriction of access to a place or resource due to a safety or security concern.

(g) **First Aid** – emergency aid or treatment given to someone injured or suddenly ill, etc., before regular medical services has arrived or can be reached.

(h) **HEPA filtration** – high efficiency particulate air filter also known as an absolute filter. An extended medium dry-type filter with:

- A rigid casing enclosing the full depth of the medium.
- A minimum particle removal efficiency of 99.97% for thermally generated monodisperse aerosol particles having a diameter of 0.3 μm.
- A maximum pressure drop of 1.0 inch water when clean and operated at its rated airflow capacity.

(i) **Medical Care** – professional treatment for illness or injury.

(j) **Personnel Accountability** – a means to identify missing personnel after an emergency or evacuation has occurred.

(k) **Personal Protective Equipment** – specialized clothing or equipment worn by employees for protection against health and safety hazards, designed to protect many parts of the body, e.g., eyes, head, face, hands, feet, and ears.

(l) **Prophylaxis** – prevention of a specific disease, as by studying the biological behavior, transmission, etc., of its causative agent and applying a series of measures against it.

(m) **Radiological Protective Prophylaxis** – use of iodine for treatment of internal radiation exposure.

For hazardous materials releases, EH&S personnel consider other possible protective actions, such as blocking agents, chemical neutralizing agents, water and food intervention levels, transportation route access controls, and impromptu respiratory protection. During these types of events, personnel expected to respond to the EOC will be provided safe route instructions before being requested to respond.

7.1. Personnel Accountability

Personnel accountability is a critical step in the protective action process, especially in conjunction with evacuation from an impacted building. All DOE sites are subject to this basic workplace safety requirement, which is generally considered satisfied if designated personnel (e.g., BET members) verify that no one remains inside an evacuated building and all evacuees meet at Assembly Areas outside of the impacted buildings for an informal headcount.

To account for all personnel prior to, during, and immediately following an incident, employees may receive a LabAlert message providing options for reply. It is paramount that the entire message be listened to and the correct response selected. Personnel accountability reports can be generated using the responses in LabAlert indicating whether personnel are on site, off site, safe, etc. These responses regarding status and whereabouts are recorded so that emergency response personnel can be alerted if a response is necessary.

The primary objective of personnel accountability procedures is to ensure that search and rescue efforts can be initiated promptly to provide for the safety of building personnel who may be injured, trapped, or unaware of the emergency condition. Additionally, a timely and accurate accountability of personnel can prevent the initial emergency responders (i.e., firefighters) from unnecessarily conducting a potentially hazardous search and rescue mission.

7.2. Subcontractors

A significant amount of construction takes place at the Laboratory. Construction contractors may not necessarily be reached through the PA system or have access to LabAlert, therefore, the Construction Safety Manager will notify each project team in the event of a site evacuation, shelter-in-place, or lockdown that affects construction projects or workers.

7.3. Personnel Information

NOTE: To facilitate personnel accountability and ensure communications via LabAlert are received, employees must enter their current contact information into the Human Resources Information System (HRIS)/Employee Management System (EMS) database, which must also reflect current and accurate work locations.

In the event of a building evacuation, Assembly Areas have been identified within specific areas to provide designated locations for evacuated personnel to report to so that personnel accountability may be performed. Building emergency plans contain assembly area location information. If there are questions as to where Assembly Areas are located or for facility-specific information, please contact the BET Leads. Personnel should be aware of their surroundings, building location, and Assembly Area prior to the onset of an emergency event and evacuation.

9 DEFINITIONS

See EM-TBLE-014 for a dictionary of terms.

10 RECORDS

None

11 APPENDICES

None

12 REFERENCES

11.1. Governing Documents

DOE O 151.1C, Comprehensive Emergency Management System

11.2. Authorizing Documents

Master Emergency Management Plan

11.3. Related Documents

Emergency Guide

All Hazard Awareness Employee Pocket Guide

11.4. Generated Forms

EM-ERO-003, Building Accountability Form

Chapter 24
EHS TRAINING PROGRAM

Contents

Approved by James Basore

Revised 09/15

NOTE:

. . . . . Denotes a new section.

. . . . Denotes the beginning of changed text within a section.

. . . . Denotes the end of changed text within a section.

24.1 Policy

It is Lawrence Berkeley National Laboratory (LBNL) policy that all employees, affiliates, contractors, and others who perform work at, or for, LBNL receive appropriate training commensurate to their responsibilities as required to perform their work in a safe and environmentally sound manner. The Environment/Health/Safety (EHS) Training Program provides training to help ensure that all such personnel know the hazards associated with their jobs, understand the possible health and safety effects of exposure to those hazards, and know how to perform operations safely and in accordance with all applicable work practices and environmental protection requirements.

The EHS training policy is based on operational needs; state and federal laws and regulations; Department of Energy (DOE) orders; Environment, Safety & Health (ES&H) standards; contract requirements for vendors and construction subcontractors; and LBNL policies and guidelines.

24.2 Scope

The EHS Training Program is a coordinated institutional training program that helps ensure that LBNL employees, affiliates, contractors, and others who perform work at or for LBNL receive appropriate training necessary to protect their health, and to perform work in a safe and environmentally sound manner. The EHS Training Program uses a systematic and risk-graded approach, based on assigned responsibilities and activities performed. This document defines the EHS Training Program as it applies to required job or activity-level training and explains the roles and responsibilities for the development, delivery, completion, records management, and assignment of training requirements.

24.3 Applicability

This policy applies to all LBNL employees, affiliates, contractors, and others who perform work at or for LBNL, and LBNL-controlled off-site locations and facilities, including UC Berkeley-controlled spaces. *Note: From here forward, the term "worker" is used to represent this group.*

With the exception of General Employee Radiological Training (GERT) and Construction Subcontractor Safety Orientation Training, the contents of this chapter do not apply to subcontracted work by vendors or construction subcontractors who perform work under the Subcontractor Job Hazards Analysis (sJHA) process or Construction Job Hazards Analysis (CJHA). Prior to their arrival at LBNL, these workers are required to satisfy, through their employer, training requirements to meet state and federal laws and regulations; Department of Energy (DOE) orders; Environment, Safety & Health Standards; contract requirements; and LBNL policies and guidelines. EHS may require validation of completed training, and may also require gap training by their employer at their expense when, for example, EHS has additional requirements (specific to LBNL) that the worker needs to complete, or when there is evidence through work observation or other means that the worker needs additional training. However, only the worker's employer, not EHS, is responsible for ensuring that their workers have met all training requirements applicable to the type of work they are hired to perform at LBNL. At the discretion of LBNL, EHS may provide gap training in some cases. Any gap training provided by LBNL is only applicable to work being performed at LBNL. For additional training guidance for construction subcontractors, see Work Process E, *Required Safety Training*, of the ES&H Manual *Construction Safety Program*.

24.4 Exceptions

1. Waivers from Required Training:
    a. Waiving a training requirement is a way to remove the requirement.
    b. A waiver may be granted by the activity lead or activity lead designee through the work authorization process under the following conditions:
        i. The worker is not performing work that requires the training.
            1. The activity lead can waive their worker's training requirement only if his or her work does not involve hazards that require the training, or it is below the

level of hazard that necessitates the training. For example, if a worker is assigned ladder safety training but never performs work on a ladder, the activity lead can waive the requirement, because it is not applicable.

    ii. The worker works solely at another institution (such as the UC Berkeley campus), and his or her work-related training requirements are solely governed by this entity.

  c. If a worker believes that a training requirement is not applicable, he or she may contact his or her activity lead or supervisor, or EHS Training, for guidance and support.

2. Training Credit by Equivalence:
    a. “Equivalence” is the process by which EHS Training gives a worker course credit for an LBNL course because the worker completed an equivalent course at another institution. For example, certain trainings completed at other Department of Energy (DOE) facilities, related institutions (e.g., UC Berkeley), and off-site training providers can be recognized as equivalent to LBNL trainings.
    b. A worker requests equivalence credit by sending the official training transcript indicating the completed training course, the institution/vendor that provided the training, the date of completion, and contact information to EHS Training at training@lbl.gov.
    c. EHS Training then reviews the transcript and works with the responsible subject matter expert (SME) to evaluate whether the training is equivalent, or whether site-specific gap training is needed to ensure the individual understands applicable LBNL safe-work practices and policies.
    d. Equivalence is also granted for courses that the DOE National Training Center has qualified as reciprocal.

24.5 Organization

- EHS Training reports through EHS Division Senior Management.
- EHS Training is a collaborative endeavor with LBNL division management, subject matter experts, division-level training functions, division safety coordinators (DSCs), line management, safety advisory groups and committees, EHS instructors, and the Information Technology (IT) Division.
- Line management provides on-the-job training (OJT) as well as training that is specific to the work conducted in its actual environment, and ensures that training requirements are met.
- EHS Training has partnered with EHS IT to maintain the Berkeley Lab Training system(s).
- EHS Training supports division-level training needs by providing:
    - Guidance and support for the design, development, implementation, and evaluation of division trainings
    - Access to EHS training systems used to manage, deliver, and track training requirements
    - Access and support for managing training records and reports

24.6 Roles and Responsibilities

Role	Responsibilities
Division managers with DSC support	• Review its operations and facilities to identify any ES&H training needs that are not already specified as institutional training requirements for anyone performing work within the division's area of control.

	• Inform EHS Training when implementing local training requirements delivered through the Berkeley Lab Training system(s) and where institutional record keeping is required.
Line managers (supervisors, project leads, activity leads)	• Identify qualification and training requirements for workers working on activities under their responsibility. • Provide on-the-job training, as needed, to help ensure workers are able to perform their work safely and in accordance with their assigned work responsibilities. • Ensure that workers have the necessary resources and time to complete their required training. • Ensure that workers satisfactorily complete all required EHS training before performing the work or activity. If training has not been completed, ensure that workers are not performing any work that requires the training. In some cases a worker may perform work while they are in the process of completing training, but there are conditions for this allowance. Refer to Work Process A.6, *Completing Training Requirements*.
Workers (employees, affiliates, contractors, and others who perform work at or for LBNL)	• Satisfactorily complete all required training, including training mandated by LBNL and any training associated with a work assignment on initial hire and, as applicable, when assigned to a new position, task, or activity with new hazards. • If required training has not been completed, worker cannot perform any portion of the work or activity requiring that training. However, a worker may be able to perform work while their training is in progress, but there are conditions for this allowance. Refer to Work Process A.6, *Completing Training Requirements*. • Discuss with supervisor any additional training needed to maintain and improve ability to perform work safely and effectively. • Notify EHS Training if course completion record is inaccurate.
EHS Training	• Provides a training curriculum that addresses pertinent regulatory requirements, LBNL policy, and best practices; and that provides the necessary knowledge, skill, and awareness to operate in a safe and environmentally protective manner. • Works with EHS programs to analyze, design, develop, implement, and evaluate curriculum and trainings in alignment with DOE's *Alternative Systematic Approach to Training* (DOE-HDBK-1074-95).

	• Works collaboratively with division-level and program-level training functions to design, develop, and evaluate instructional programs and courses. • Works with SMEs to interpret external training requirements and provide recommendations for their implementation at LBNL. • Reviews EHS training requirements and approves any significant changes as needed. • Manages the Berkeley Lab Training systems and Berkeley Lab Training website in partnership with EHS IT. • Manages institutional training records and ensures that training-related records and reports are accessible for use by workers and Laboratory management as appropriate. • Ensures that required courses are made available to employees, affiliates, contractors, visitors, and all those who perform work at, or for, LBNL. • Assigns internal course codes for external courses as needed. • Notifies supervisors and affected workers of new or changed training requirements if these changes require action on their part. • Establishes and maintains EHS Training policies, programs, and procedures. • Works with line management to support and qualify EHS instructors.
Safety Advisory Committee	• Provides input on the EHS Training Program and policies. • Provides input on significant changes to EHS training requirements as well as newly proposed courses that have a significant impact on LBNL, and ensures these efforts meet the needs of the Laboratory.
Instructors	• Work with EHS Training to design, develop, and deliver training in accordance with DOE's *Alternative Systematic Approach to Training* (DOE-HDBK-1074-95). • Work with EHS Training to schedule sessions to meet customer's needs. • Work with EHS Training to review training and make improvements as agreed. • Work with EHS Training to ensure content is accurate and up-to-date. • Work with EHS Training to develop effective teaching skills.

24.7 Definitions

Term	Definition
Certification	The process of validating performance and/or compliance with the requirements of established standards. Typically, this means obtaining written verification of worker's compliance with specific requirements.
Gap training	Training that is designed to address a lack of skill, or lack of knowledge about a particular policy, work process, or procedures applicable to performing work at LBNL. For example, if a worker completed fall protection or electrical safety training at another institution, EHS may require the worker to complete a gap training in order to ensure the worker understands LBNL-specific work requirements and expectations. This may be either a formal training or an informal training based on determined need.
Equivalence	A process of issuing LBNL training credit for having completed an equivalent training at another institution.
Institutional training requirements (ITRs)	Training requirements that apply to a particular category of workers throughout the Laboratory and that consist of legal, contractual, and LBNL-specific requirements. Legal requirements are based on a law, regulation, rule, or statute (federal, state, or local). Contractual requirements are those requirements that are stated in the LBNL contract, and include DOE orders and directives as well as LBNL policies. Laboratory-specific requirements are requirements that LBNL imposes on itself based on operational need.
Local training requirements (LTRs)	Training requirements that apply to a localized activity, work area, division, or facility. These can be generated within a division and are directed to workers performing work in that division or facility.
On-the-job training (OJT)	A training process used to ensure that workers are qualified to perform their specific work activities and tasks safely and effectively. It is an iterative performance-based process that involves experienced staff (activity lead, activity lead designee, or supervisor) training a less experienced worker until he or she can demonstrate, to the trainer's satisfaction, an appropriate level of understanding and mastery of the tasks. Refer to Work Process B, *On-the-Job Training*.
Qualification	The combination of an individual's physical abilities as well as his/her technical, academic, and practical knowledge and skills as developed through training, education, and on-the-job performance. Required reading may also be part of an individual's qualification. In some cases, qualifications may be formally evaluated and

	documented.
Waiver	A process of removing a training requirement because the worker does not perform the work that requires the training. In this way the training requirement is not applicable. See Section 24.4.1, *Waivers from Required Trainings*.

24.8 Required Work Processes

Work Process A. Required Training Process

This section describes the process for identifying, assigning, completing, and documenting training requirements.

1. **Basis for Requirements**. Workers performing work at, or for, LBNL are expected to be capable of carrying out their work safely, securely, and effectively. In many cases, specific skills, knowledge, and abilities are required in order to be assigned a particular job, qualified to perform a certain activity, or to be allowed to work in a particular facility. Completion of required EHS training courses provides greater assurance that workers will be aware of the hazards associated with their job or activity, understand the possible health and safety effects of exposure to those hazards, and know how to perform operations safely and in accordance with all applicable work practices and environmental protection requirements.
2. **Origin of EHS Training Requirements**. EHS Training requirements originate in several ways, either within or outside the organizational group to which they apply. Sources include DOE orders and regulations, OSHA regulations, EPA regulations, Department of Transportation regulations, the California Code of Regulations, LBNL's environmental permits, LBNL's Operating and Assurance Program, and LBNL policies and best practices. Requirements derived from non-LBNL sources are restated in terms appropriate to LBNL by the applicable EHS program or policy owner(s) with support from EHS Training.
3. **Types of Requirements.** There are two types of training requirements: institutional training requirements and local training requirements:
    a. **Institutional training requirements (ITRs)** apply to workers throughout LBNL and consist of legal, contractual, and Laboratory-specific requirements.
        i. Legal requirements are based on a law, regulation, rule, or statute (federal, state, or local).
        ii. Contractual requirements are those requirements that are stated in the LBNL contract, and include DOE orders and directives as well as LBNL policies.
        iii. Laboratory-specific requirements are requirements that LBNL identifies based on

operational need.

   b. **Local training requirements (LTRs)** have a narrower scope than ITRs. They apply to workers who perform work within a division or facility. For example, a division may require orientation training for all those who perform work in the division, or a facility manager may require training in order to gain access or perform work within a facility. LTRs are often driven by division-level operational needs, which may or may not be driven by legal or contractual obligations.

4. **Identifying Training Requirements.** Training requirements are identified by line management, division management, and LBNL programs:
   a. Line managers identify which training requirements apply to their workers by using the Integrated Safety Management (ISM) and Work Planning and Control (WPC) process. This involves defining work, analyzing hazards, and identifying required controls, including EHS-required training. In addition, line management provides on-the-job training, which is described in detail in Work Process B, *On-the-Job Training*, below. Line management also works with staff to identify any staff development training, formal or informal, to build or further develop needed role or job-related competencies.
   b. Division management identifies which training requirements apply to workers performing work in the division. This is done by examining all institutional training requirements, evaluating existing divisional requirements, and considering whether new local training requirements are needed.
   c. LBNL programs identify which training requirements apply to workers within its area of responsibility. This is done by evaluating applicable legal, contractual, policy, and programmatic needs.
5. **Assigning Training Requirements**. Once training requirements have been identified, they are assigned via the Work Planning and Control process or via the Berkeley Lab Training system.
   a. The Work Planning and Control process assigns activity-related EHS trainings, and in some cases, division-specific training. For example, a work activity that involves the use of chemicals may require EHS 0348 *Chemical Hygiene and Safety*.
   b. The Berkeley Lab Training (BLT) system assigns institutional training requirements that are not associated with a particular hazard or work activity. Examples include EHS 0470 *General Employee Radiological Training* and non-EHS training requirements, such as RII 0004 *UC Ethical Values and Conduct*, SEC 0201 *Cyber Security*, and SEC 0500 *Hosting Foreign Nationals*.
   c. In most cases, workers receive training from both the Work Planning and Control system and the Berkeley Lab Training system. Workers can review their training status for all training requirements by accessing their LBNL Training Profile at training.lbl.gov.
   d. Once a training requirement is assigned either by Work Planning and Control or the Berkeley Lab Training system, EHS Training informs workers and their supervisor via email notifications. Go here for details about these notifications.
6. **Completing Training Requirements**
   a. Workers must complete assigned EHS training that is legally mandated or that is required as part of a work assignment on initial hire (appointment), whenever he/she is assigned to a position or activity with new hazards or conditions that require training, and whenever he/she is assigned refresher trainings.
   b. Workers who have not completed assigned EHS training that is required as part of their work assignment cannot perform any portion of the work that requires that training.

i. For example a worker cannot operate a powered industrial truck until all associated training requirements are completed. The same is true for operating a crane, performing radiological work, using a respirator, entering a confined space, or work that involves the use of fall protection.

c. However, there are some cases when a worker may be able to perform work while his/her training is in progress. This allowance is designed for situations when, for example, the required training class is not available because of scheduling. When allowable, the worker must work under direct supervision of a trained and knowledgeable worker and with approval of his/her supervisor or activity lead.

d. Since there are many factors that inform whether a worker can perform work while training is in progress, EHS Training can provide guidance.

e. To receive credit for training, workers must satisfactorily complete the training and pass any examinations or practical observations.

7. **Documenting Training Completions**

a. EHS Training documents worker's training completions in accordance with DOE Administrative Records Schedule 29.2. See Work Process D, *Training Records*, below.

b. Workers can view their training completions and training status by accessing their LBNL Training Profile at training.lbl.gov. The LBNL Training Profile is the official training record. It provides workers with a comprehensive view of their training requirements as well as completion dates and completion status of all trainings whether required or not. It also provides direct access to trainings. A worker can also view the training status of activity training requirements through the Work Planning and Control Activity Manager system. Activity Manager does not report on the completion status of institutional training requirements since these are not specific to work activities.

c. The distinction between Berkeley Lab Training and Activity Manager is that the Berkeley Lab Training System's Training Profile provides a comprehensive report of all training requirements (safety and non-safety) whereas Activity Manager provides the status of activity-related safety trainings.

d. In addition to these sources, the Berkeley Lab Reporting Portal can be used to build a comprehensive training summary report that shows a worker's entire training history. For example, the LBNL Training profile will show the last time you completed EHS 0470, General Employee Radiological Training (GERT), whereas BRS will show each date you completed GERT.

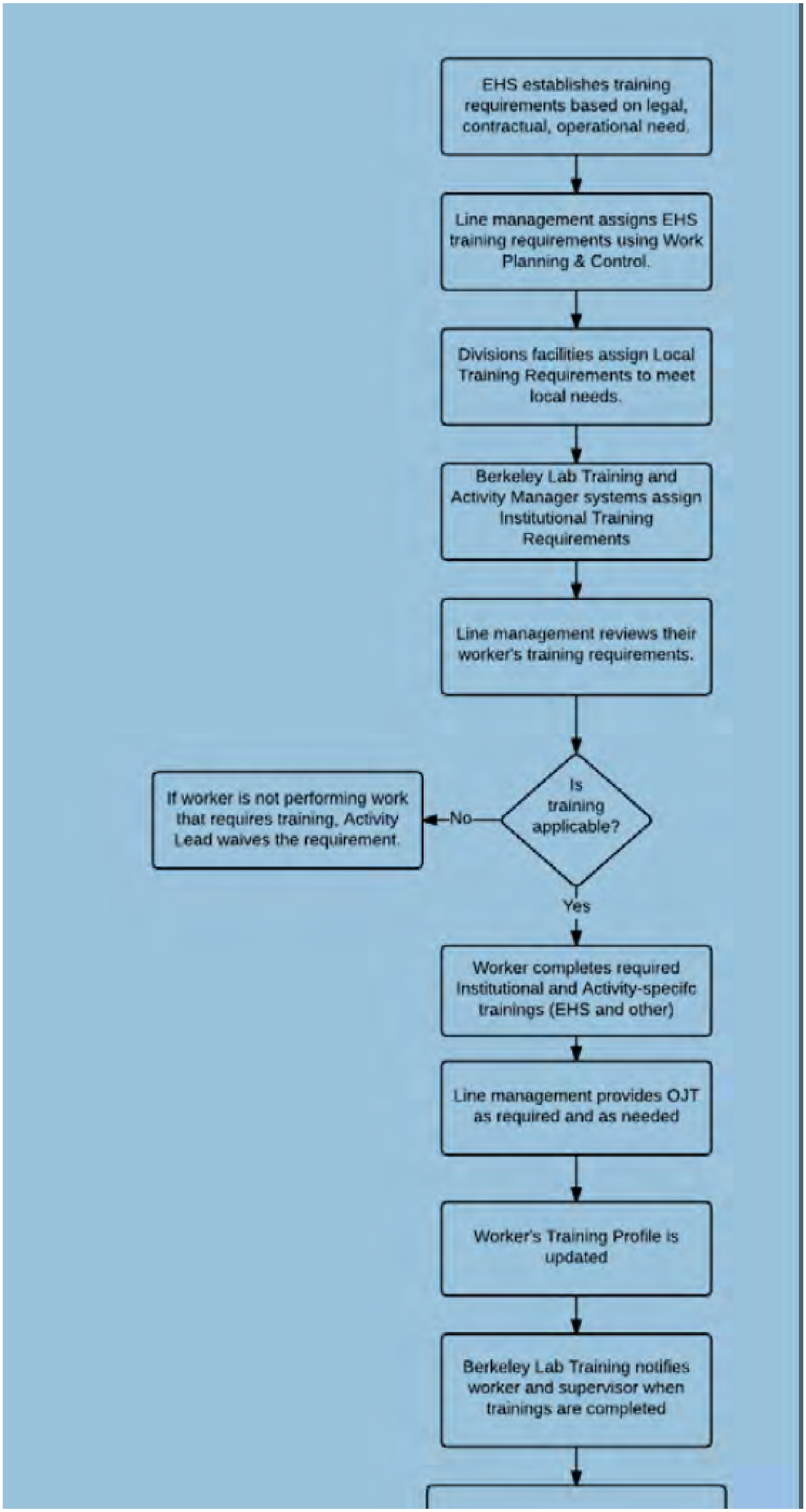
e. EHS Training can provide training records upon request.

8. **Required Training for Personnel at Off-Site Locations**

a. All LBNL workers working on LBNL projects at off-site locations, including UC Berkeley-controlled spaces, are required to adhere to training requirements as stipulated by the host institution or Partnership Agreement on ES&H. In the absence of a Partnership Agreement on ES&H or host institution requirements, LBNL requirements must be completed.

b. In some cases, facility or procedure-based training, specific to the location, will fulfill a training requirement. Contact EHS Training for assistance.

Diagram of Required Training Process


EHS establishes training requirements based on legal, contractual, operational need.
Line management assigns EHS training requirements using Work Planning & Control.
Divisions facilities assign Local Training Requirements to meet local needs.
Berkeley Lab Training and Activity Manager systems assign Institutional Training Requirements
Line management reviews their worker's training requirements.
Is training applicable?
No
If worker is not performing work that requires training, Activity Lead waives the requirement.
Yes
Worker completes required Institutional and Activity-specifc trainings (EHS and other)
Line management provides OJT as required and as needed
Worker's Training Profile is updated
Berkeley Lab Training notifies worker and supervisor when trainings are completed

Work Process B. On-the-Job Training (OJT)

This section describes on-the-job training (OJT) within the context of worker qualification.

1. **Worker Qualification.** Line management has a responsibility to ensure that workers are qualified to perform their work activities and tasks safely and effectively. Qualification to perform work includes both an operational and a safety component. The safety requirement is that workers must be knowledgeable and familiar with the hazards and controls associated with each of their assigned tasks and demonstrate an ability to perform their work activities safely. While formal EHS Training courses can provide background information on the majority of hazards and controls, they aren't necessarily designed to provide detailed information specific to an individual's work and work environment. This is the responsibility of line management and is most effective when integrated into the scientific, technical, quality, efficiency, and/or other operational aspects of qualification.
2. **On-the-Job Training (OJT).** A common method to ensure that workers are qualified to perform their work activities and tasks safely and effectively is to perform OJT, which is an iterative process whereby the trainer who has the skill, knowledge, and experience (for example, the activity lead, activity lead designee, or supervisor) works with the trainee until he or she demonstrates, to the trainer's satisfaction, an appropriate level of mastery of the tasks.
3. **Graded Approach.** The degree of formality and the comprehensiveness of training should be graded to the overall risk. It is expected that the higher the risk, the more effort and care will be expended in ensuring that workers are appropriately qualified (competent). This can be broken down as follows:
   a. Higher Risk: This includes activities or tasks that involve Risk Level 3 hazards as defined by Work Planning and Control. Two examples include laser and radiological work. Training/qualification and OJT documentation requirements are specified in the formal work authorizations as governed by policies, regulations, codes, and standards.
   b. Medium Risk: This includes activities or tasks that involve Risk Level 2 hazards as defined by Work Planning and Control. Examples can include work with complex instrumentation or processes. Training/qualification and OJT documentation requirements are driven by a blend of line management accountability and hazard assessment, where the level of qualification documentation, including OJT documentation, is determined by division policies and/or division practices.
   c. Lower Risk: This includes activities or tasks that involve Risk Level 1 hazards as defined by Work Planning and Control. The method of qualification may be informal, and OJT documentation is at the discretion of line management.
4. **OJT Method.** A common OJT instructional method is demonstration-performance, which can be broken down as follows:
   a. **Explain:** The trainer first explains to the worker how to perform the task or activity safely and effectively. The critical steps are identified and differentiated from the non-critical steps. Hazards, risks, and ways to mitigate them are stressed and reinforced throughout the training.
   b. **Demonstrate:** The trainer then demonstrates the task exactly the way the worker is expected to perform it. The demonstration can be repeated until the trainee has a clear picture of the action and understands how it is performed and why it is performed that

way.

c. **Perform:** The worker then practices the activities and tasks under the guidance of the trainer. As the worker performs each step of the task, the trainer makes comments and corrections as required. When the worker is ready, he or she then "teaches" the operation back to the trainer. OJT is completed when the worker demonstrates, to the trainer's satisfaction, that he or she has the ability to safely perform the activities and tasks.

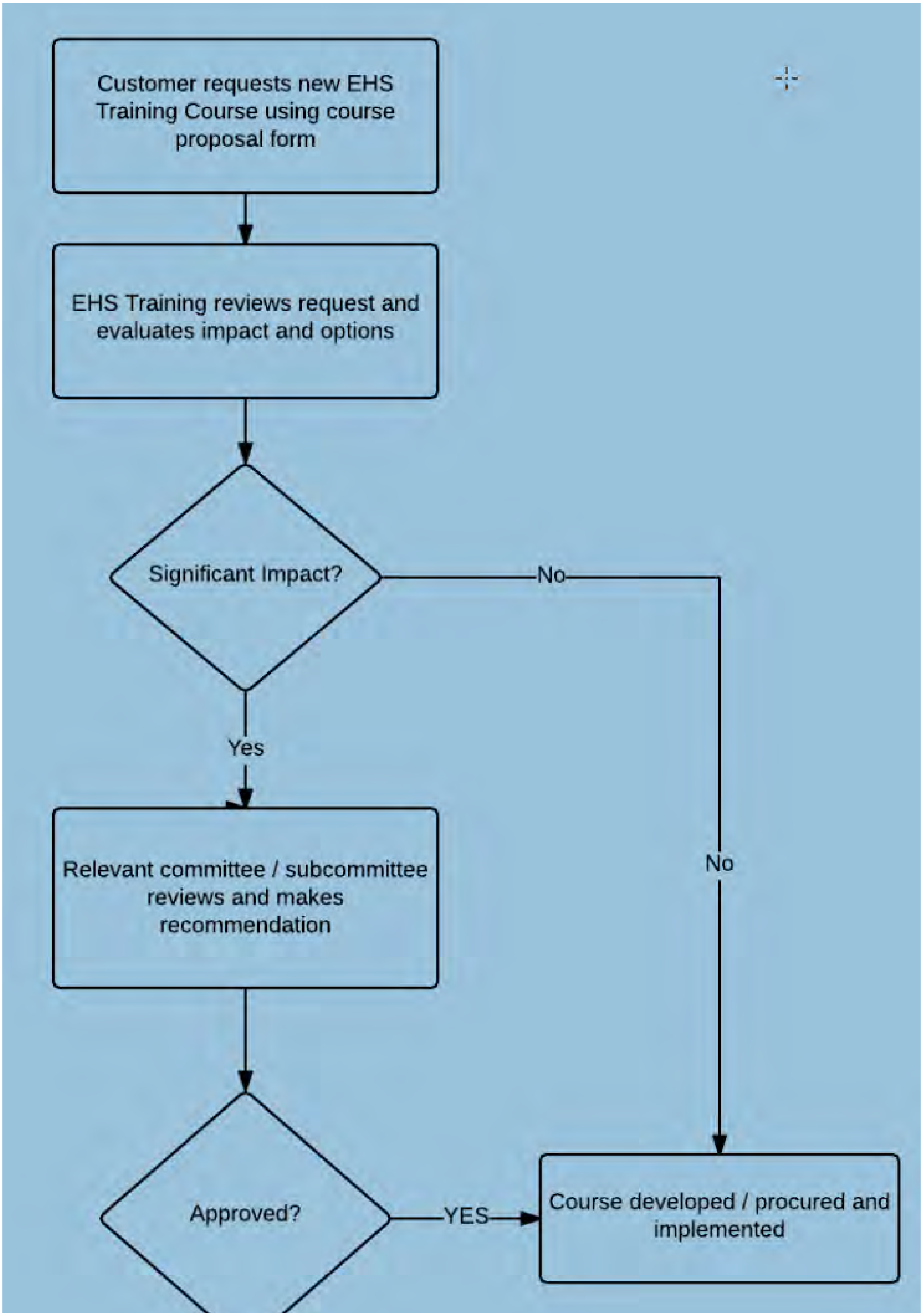
5. **OJT Resources.** EHS Training has developed the following OJT resources. EHS Training is also available to help divisions develop an OJT program.
    - Guidance for OJT Trainers (PDF)
    - OJT Checklist Example (PDF)
    - OJT Checklist Example Descriptive (PDF)

Work Process C. Implementing New Training Requirements

This section describes the process for onboarding new EHS training requirements.

1. The EHS Training Program aligns to the guidelines set forth in DOE-HDBK-1074-95 *Alternative Systematic Approaches to Training*. This forms the foundation for how EHS Training applies a risk-graded but systematic approach to the design, development, implementation, and evaluation of training.
2. Any division or program can request a new institutional training requirement through the EHS Course Proposal process. EHS Training must approve all new courses and significant changes and updates to existing courses.
3. In some situations (for example, where new training requirements and courses affect large or specific populations at the Laboratory), the EHS Training Program Manager may request additional approval(s). Approval may be from the EHS Division office or senior Laboratory management with advice from the Safety Advisory Committee (SAC) and/or other applicable subcommittees.
4. To ensure training resources are allocated appropriately, and to focus attention on the more critical courses, EHS Training follows a risk-graded approach that takes into account (a) the complexity of the job, (b) the consequence of error based on risk/hazards potential, (c) needs framed by regulatory, contractual, and programmatic drivers, and (d) business, legal, or reputational risks that may result from not providing the training.
5. The following diagram outlines this process:

Diagram Outlining Process for Implementing New Training Requirements


Customer requests new EHS Training Course using course proposal form
EHS Training reviews request and evaluates impact and options
Significant Impact?
No
Yes
Relevant committee / subcommittee reviews and makes recommendation
No
Approved?
YES
Course developed / procured and implemented

Items to review include:

1. Should training be required?
2. Is requirement driven by policy, legal, contractual, or laboratory-specific need?
3. Are there alternate courses or methods to meet objectives?
4. Has risk and value analysis been performed?
5. Has cost/benefit been evaluated?
6. Is population correct?
7. Is repeat frequency correct?
8. Is date ITR becomes effective appropriate?
9. Will "grandfathering" be allowed?
10. Is there a plan to communicate the requirement?

Work Process D. Training Records

This section describes training-related record-keeping requirements.

1. Training Records:

   a. The Berkeley Lab Training system and the Human Resources Information System (HRIS) are the official training systems of the Laboratory. These systems generate training data, training reports, training profiles, and course completion records, all of which are made available to workers, supervisors, training administrators, division safety coordinators, UC, and DOE management as needed.
   b. Individual workers and supervisors can access current training records via the LBNL Training Profile and Berkeley Lab Reporting Portal.
   c. Records and reports can be requested from the EHS Training Office.
2. Training Materials:
   a. EHS Training maintains copies of training materials in electronic format and has a process for managing training revisions in support of DOE records archiving requirements.
   b. Training materials include course development materials and content, test data or completions, and if applicable, a course syllabus.
3. Record Retention:
   a. Course records are managed in accordance with DOE Administrative Records Schedule 29.2, and are performed in partnership with Berkeley Lab's Archives and Records Office.
   b. EHS training records are managed locally until they are archived off site. In either case, they are available upon request through the EHS Training Office.

Work Process E. Training Systems

This section describes the training systems managed by the EHS Division.

1. EHS Training manages the following training systems in partnership with IT.
   a. Berkeley Lab Training Database
   b. Course Builder
   c. Berkeley Lab Training website
2. EHS training systems are integrated with LBNL's Work Planning and Control Activity Manager system, Human Resource Information System (HRIS), and other institutional and division-managed systems that require training data.
3. EHS Training and EHS IT are responsible for maintaining the EHS-owned Berkeley Lab Training systems in accordance with business needs.
4. EHS Training provides role-based access to EHS-owned Berkeley Lab Training systems based on expressed business needs.

Work Process F. Instructor Qualification

This section describes the process for qualifying EHS Instructors.

1. EHS Division line management is responsible for determining the qualifications and the most appropriate candidate for teaching an EHS course. Qualification is based on an individual's (a) technical competency (knowledge of the subject matter, experience in the work place, and knowledge of the objectives being met in the course) and (b) instructional competency.
2. EHS Training works with division line management to help ensure that instructors have the instructional competency necessary to deliver effective training courses.
3. EHS Training provides one-on-one support as well as formal Train-the-Trainer courses to support instructor development.
4. EHS Training documents instructor qualifications.

24.9 Source Requirements

- 10 CFR 851.25, Worker Safety and Health Program, *Training and Information*
- 29 CFR 1910, *Occupational Safety and Health Standards*
- 29 CFR 1926, *Safety and Health Regulations for Construction*
- 10 CFR 835.103, *Occupational Radiation Protection, Education, Training and Skills*

24.10 Reference Documents

Document number	Title	Type
02.13.002.001	Health Services	Program
03.02.002.001	Research with Human and Animal Subjects	Program
07.01.002.001	General ES&H Requirements, Responsibilities, and Work Practices	Program
07.01.002.001	EHS Division Charter	Program
07.02.001.001	Work Planning and Control	Program
07.02.004.001	sJHA Process – Subcontractor Job Hazards Analysis	Program
07.03.001.001	Occurrence Reporting	Program
07.03.002.001	Injury Response and Review	Program
07.06.001.001	Emergency Management	Program
07.07.001.001	Elevated Work – Aerial Work Platforms, Ladders, and Scaffolds	Program
07.07.002.001	Asbestos Hazards and Controls	Program
07.07.004.001	Biosafety	Program
07.07.005.001	Chemical Hygiene and Safety Plan	Program
07.07.006.001	Confined Spaces	Program
07.07.007.001	Construction Safety	Program
07.07.008.001	Cranes, Hoists, and Rigging Safety	Program
07.07.009.001	Safe Handling of Cryogenic Liquids	Program
07.08.001.001	Radiation Safety	Program
07.07.011.001	Electrical Safety Program	Program
07.07.012.001	Ergonomics	Program
07.07.014.001	Fall Protection Program	Program

07.07.015.001	Gas Safety	Program
07.07.018.001	Laser Safety	Program
07.07.019.001	Lead Hazards and Controls	Program
07.07.020.001	Lockout/Tagout Program	Program
07.07.021.001	Machine Safeguarding – Shop and Laboratory Machine Safety	Program
07.07.022.001	Noise Hazard Assessment and Control	Program
07.07.023.001	Non-ionizing Radiation	Program
07.07.024.001	Personal Protective Equipment (PPE)	Program
07.07.025.001	Forklifts and Other Powered Industrial Trucks	Program
07.09.006.001	Spill Prevention, Control, and Countermeasures Program	Program
07.07.026.001	Pressure Safety and Cryogenics	Program
07.09.007.001	Storm Water Pollution Prevention	Program
07.07.031.001	Welding, Joining, and Thermal Cutting Safety	Program
07.10.001.001	Transporting and Shipping Hazardous Materials	Program
07.10.002.001	Waste Management	Program
07.07.032.001	Respiratory Protection	Program
07.11.001.001	Fire Prevention and Protection	Program

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ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY

______________________________Berkeley Lab Training Program ____

LBL 0010 Overview of Safety, Emergency Preparedness & Trafficking Victims Protection
Course Syllabus

Subject Category: General Awareness Training
Course Length: 40 minutes
Delivery Mode: Online

Course Prerequisite: None
Medical Approval: None

Course Purpose: Purpose of this training is to provide new employees with a general overview of Environment Health and Safety (EHS), Emergency Preparedness and their responsibilities associated with Trafficking Victims Protection. The EHS module provides new employees a general overview of the safety principles of Lawrence Berkeley Lab. It introduces Integrated Safety Management (ISM), and general hazards at Berkeley Lab and techniques to mitigate these. The Emergency Preparedness module provides direction in the event of an Operational Emergency at Berkeley Lab so that staff have the awareness for how to keep safe. The Trafficking Victims Protection module Ensures Lab employees understand their obligations to comply with federal laws enacted to combat trafficking in persons.

Audience:
This training is for workers hired March 1st, 2016 or after.

Learning Objectives:
On completion of this training participants will be able to:

- Identify the five core functions of Integrated Safety management and how they are applied.
- Identify types of hazards found at Berkeley Lab and methods used to mitigate and control these
- Identify process for reporting injuries and illness
- Identify the purpose, role and function of Emergency Management Program
- Identify methods the Lab uses to communicate before, during and after an emergency
- Determine three types of Operational Emergencies most applicable to the Lab
- Identify three protective actions and how to implement each in response to an emergency
- Identify your responsibilities for responding to and reporting emergencies.
- Identify the purpose of the Federal Trafficking person's law
- Understand the responsibility of abiding by LBNL's trafficking person's policy.

Training Compliance Requirements: LBNL's ISM Plan 6.2.3.1, OSHA 29 CFR 1910.145 Section L-11.8 Accident Prevention Signs and Tags. DOE O 151.1C Chapter III, paragraph 4a, and Chapter IV, paragraph 4a, Training and Drills

Written Exam: No. Quiz questions are part of the training

Practical Exam: No

Retraining/Recertification: No

Course Evaluation: Written evaluations regarding the effectiveness of the trainer, the training, and the visual aids.

Web Resource: EHS Training Program web page https://training.lbl.gov or contact EHS Training manager, James Basore

http://training.lbl.gov/bitCourses.html

Aboveground Storage Tanks (ASTs): 2015 Summary

Joint Genome Institute

Building No.	Tank No.	Capacity (gallons)	Tank Contents	Use	Containment	Status
JGI 400	TK-001-JGI	4000	Diesel	Service to engine generator	Double wall tank w/leak detection	No action required