PUB-3140

Integrated Environment, Health & Safety Management Plan

Integrated Safety Management (ISM) System

September 2007

Revision 6

Lawrence Berkeley National Laboratory

PUB-3140

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Integrated Safety[1] Management provides important opportunities and advantages for the Lawrence Berkeley National Laboratory and the Department of Energy in the consistent and proper attention to environmental protection and Safety essential in the conduct of the Laboratory's missions. This document describes a forward-looking and comprehensive institutional approach and set of requirements for operations and activities, and for the implementation of the Integrated Safety Management System. A high level of attention to environmental protection, safety, health, and performance is of prime importance to the success of the Laboratory and the Department of Energy.

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1 **Wherever Safety is footnoted ([1]), the following applies:**
DOE P450.4 Safety Management System Policy "...the term safety is used synonymously with environment, safety and health (ES&H) to encompass protection of the public, the workers, and the environment." Clause I.074 of Contract 31 expands the definition of safety by "including pollution prevention and waste minimization." This footnote indicates that this text is from DOE Policy 450.4 in which Safety is the original wording and is to mean ES&H.

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NOTICE

This LBNL Integrated Safety Management System (ISMS) Management Plan is available on the LBNL Web site at the following location:

http://www.LBNL.gov/es_and_h/ism/ism-Management Plan.pdf

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Executive Summary

Introduction

The Lawrence Berkeley National Laboratory (LBNL) takes a comprehensive institutional approach to its Integrated Safety[(1)] Management System (ISMS). This Integrated Environment, Health & Safety Management Plan ("Management Plan") articulates the institutional requirements for all operations on the main site, or at any other sites where Laboratory staff, guests, and subcontractors work. This Management Plan stipulates the requirements for LBNL's Health & Safety Manual (PUB-3000). It further requires division-specific documents, and explains the safety and environmental management system mechanisms and a work planning and authorization process. The Management Plan is based upon the Laboratory's contract with the Department of Energy (DOE), the Work Smart Standards, and LBNL ES&H policy stated in the Regulations and Procedures Manual (RPM). It addresses the Work Smart Standards (WSS) set and their incorporation into Laboratory operations. In particular, it includes restatements, clarifications, and new statements of institutional requirements for LBNL operations.

This Management Plan is intended for use by LBNL's workforce and is available for those in the University of California (UC) and DOE organizations who review operations, verify compliance, and approve modifications.

Background

The Lawrence Berkeley National Laboratory is a government-owned, contractor-operated, multiprogram research and development facility. UC manages and operates LBNL under Prime Contract DE-AC02-05CH11231 for DOE ("Contract 31"). Contract 31 defines the principles, working relationships, and contractual and legal requirements under which the Laboratory must operate.

The institutional ISMS requirements result from LBNL's careful examination of its approach to safety and the environment. They follow the guidance from DOE Headquarters and the DOE-Office of Science, Berkeley Site Office (BSO). They are consistent with Contract 31's requirements and adhere to the ISMS structure described by DOE. The requirements have been refined through an interactive process involving the Laboratory Director, Deputy Directors, and all Division Directors (including selected members of their management, supervisory, and operational staffs).

Policy and Commitment

It is the policy of Lawrence Berkeley National Laboratory to perform all work safely with full regard to the well being of workers, guests, the public, and the environment.

Keys to implementing this policy are the following core safety values:

- The institution demonstrates a strong commitment to safety by integrating safety into all facets of our work.
- Managers and supervisors are actively involved and demonstrate leadership in performing work safely.
- Individuals take ownership for safety and continuously strive to improve.
- Individuals demonstrate an awareness and concern for the safety of others.

The Laboratory is committed to doing this while meeting the requirements of Clause I.86 of Contract 31 and implementing the policy provided in DOE Policy 450.4 ("Safety Management System Policy") and the specifications and guidance for an Environmental Management System [DOE Order 450.1].

The Laboratory affirms that it:

1) Understands and supports the Contract 31 requirement for an ISMS at LBNL and the Contract's opportunities and values.

2) Adopts DOE's Integrated Safety Management (ISM) Objective, Guiding Principles, and Core Functions, and the institutional requirements in this LBNL ISMS Management Plan document.

3) Commits to implementing and using ISMS in all its programs, operations, facilities, and activities.

4) Provides responsible occupational safety, health and environmental stewardship into its strategic planning, decision-making processes, and the management of its work activities through the ISMS.

ISMS Management Plan Fundamentals

This Management Plan identifies the core requirements that provide the foundation for the Integrated Safety Management System approach to ES&H management at LBNL. These requirements implement DOE's seven Guiding Principles and five Core Functions.

DOE's Seven Guiding Principles

1) Line Management Responsibility for Safety.

2) Clear Roles and Responsibilities.

3) Competence Commensurate with Responsibilities.

4) Balanced Priorities.

5) Identification of Safety Standards and Requirements.

6) Hazard/Environmental Aspect Controls Tailored to Work Being Performed.

7) Operations Authorization.

DOE's Five Core Functions

1) Define the Scope of Work.
2) Analyze the Hazards/Environmental Aspects.
3) Develop and Implement Hazard/Environmental Aspect Controls.
4) Perform Work within Controls.
5) Provide Feedback and Continuous Improvement.

Philosophy

LBNL's overall ES&H philosophy is as follows:

1) In the context of carrying out our technical missions, given the emphasis on doing good science, ES&H is our most important day-to-day consideration.
2) Accidents are preventable through close attention to potential hazards and appropriate action by each individual and the responsible organizations.
3) Responsible stewardship of LBNL's environmental resources is an integral part of LBNL's ISMS resulting in the reduction of environmental impacts.
4) Managers, supervisors, safety line managers, and work leads are responsible for ensuring that an adequate system is in place to carry out work safely and environmentally responsibly. An identifiable line management chain is ultimately responsible for each work activity.
5) Each supervisor and safety line manager is expected to ensure that all individuals reporting to him or her understand the ES&H expectations, governing work controls, and the means by which they can safely and successfully perform their assignments while providing responsible environmental stewardship of the environmental resources in their care.
6) Each individual is directly responsible for ensuring his or her own safety and environmental stewardship, looking out for their fellow workers, and promoting a safe, healthful, and environmentally sound workplace and community. .Individuals are afforded the opportunity to participate in the development of ES&H policies and programs. All individuals are to follow ES&H-related work instructions. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the employee is responsible for notifying the appropriate individuals and assisting, as appropriate, in modifying the work instructions.

7) Employees at all levels will be held accountable for their performance with respect to ES&H.

Management Chain. Managers are individuals responsible for formulating and administering policies and programs of the Laboratory; collectively, they are the Line Management. Typically, this includes some level of responsibility for staffing, performance review, work direction and evaluation, and/or finance. The formal "chain of command" management structure at LBNL starts at the top with the Laboratory Director, and ends with Supervisors, safety line managers, or work leads. Examples include but are not limited to program heads, group leaders, department heads, division deputies, superintendents, administrators, supervisors, and work leads.

A Matrix Supervisor is responsible for providing day-to-day technical direction and oversight, including responsibilities for proper execution of ES&H activities of employees and guests in the work area of another division. The Matrix Supervisor is the safety line manager for the specified work area and acts in behalf of the division for guests and visitors of the Laboratory. A Matrix Supervisor partners with the Host Supervisor on matters of staffing, performance review, work direction, and/or evaluation.

Subcontractors. LBNL's commitment to safety, the environment, and ISM is formally extended to subcontractors and subcontract employees for whom LBNL has ES&H responsibility. ES&H requirements are to be incorporated into all subcontracts and flowed down to lower-tier subcontractors, as appropriate.

Graded Approach and Tailoring. ISMS at LBNL provides for a graded approach (i.e., different levels of rigor and formality) when applying controls commensurate with the hazards and environmental aspects involved. To complement this, tailored controls address the hazard and environmental impacts, satisfy the applicable requirements, and provide adequate protection to the public, workers, and the environment.

Work Planning and Authorization. Work is planned, reviewed, and authorized before the activity begins. An appropriate work review is conducted to validate satisfaction of the ES&H requirements. Once the work begins, it is appropriately controlled (workers are responsible for adhering to the ES&H controls; Safety Line Managers and work leads ensure that workers understand the ES&H controls and understand that work is to be performed according to the defined work controls.). Safety Line Managers and work leads make sure workers have access to and knowledge about an activity's governing procedures and work controls.

Feedback and Improvement. Work activities are monitored to be sure the governing procedures and ES&H documents are being followed. Safety Line Managers and work leads observe their workers at appropriate intervals to verify that work is to be performed according to the defined ES&H work controls. Workers are to tell their safety line manager, or work lead, of ES&H problems or opportunities for improvement. A worker can stop work if there is an unsafe or unapproved condition. Each division develops and operates an ES&H self-

assessment program to guarantee a proactive approach to ES&H and to improve ES&H performance. Also, divisions are responsible for root-cause analysis and correction of ES&H-related problems. Lessons Learned are to be shared to enhance operational ES&H and facilitate cost effectiveness.

Integration. The integration of program and ES&H planning, from the Director down to individual workers, is attentive to the Institution/Facility/Activity Process. Worker involvement is critical to ISM. Thus, an important integration direction is a formalized upward involvement of workers as well as top down through the Institution/Facility/Activity Process. At the same time, PUB-3000 and the incorporation of its ISMS fundamentals are basic to Laboratory integration and operations. In this context, all work activities are to be performed according to the provisions of PUB-3000*,* with the assistance of Environment, Health, and Safety Division (EHSD) Subject Matter Experts, Division Liaisons, and the Division Safety Coordinators. Horizontal integration across the divisions is accomplished through many established groups.

Division Plans and Documents. Because each division has unique programmatic missions coupled with different types of facilities, technical work, hazards, and environmental aspects, the division is responsible for managing how ISM is implemented within their organization. This Management Plan specifies those actions that a division must perform. The division-specific approach shall be consistent with this Management Plan and PUB-3000 and documented in division-specific ISM Implementation Plans. Guidance for the development of these plans is found in Section 6.0 and 8.2 of this Management Plan.

PUB-3000. To be in line with the increased formalization brought about by ISM, the Laboratory has assembled broadly used institutional ES&H documents into a formal document structure called the *Berkeley Lab Health and Safety Manual* (PUB-3000). This comprehensive manual consolidates many documents into one convenient, online package. LBNL performs work to meet PUB-3000 requirements, which are based on the WSS set identified for specific Laboratory work and associated hazards and environmental aspects. With the implementation of ISM, employees must understand the latest ES&H requirements and their responsibilities.

Communications and Training. The implementation of an effective ISMS requires a comprehensive communications program that includes training all workers. Laboratory-wide communications and tailored training to support the ISM rollout started in 1999, and continues today. Communication goals include creating ISM awareness and sensitizing employees to environment, safety, and health issues. The intent is for ES&H issues to be a routine part of all Laboratory communications. With the increased enhancements of the integration of the Environmental Management System (EMS) into ISMS, additional awareness and responsibility training has been incorporated into the continuing ISMS training.

Standards and Requirements. Contract 31 stands as the fundamental basis for Laboratory operations. It provides the legal foundation for all activities. Clause I.86 of Contract 31 is the foundation of ISM and is consistent with DOE Policy 450.4.

Work Smart Standards. Clause I.79 of Contract 31 contains the language providing for WSS. These standards establish workplace ES&H controls and are an integral part of ISM. DOE, UC, and LBNL collaborated in a Necessary & Sufficient (N&S) Process to tailor a WSS set for LBNL. This WSS set replaced existing contractual ES&H requirements.

Maintenance of the WSS Set. The standards can be modified to meet the Laboratory's changing needs. A formal Change Management Process, using the N&S Process, provides an opportunity to keep the WSS set up-to-date.

Flow Down of Requirements. LBNL operations are addressed through ES&H management processes found in RPM Chapter 7 (*Health and Safety*) and controls noted in PUB-3000. This and other institution-level documents include formal processes for applying requirements locally at the facility and activity levels. A key to the flow-down process is the formal incorporation of the WSS set into PUB-3000.

Overview of Revision 6. The current revision (Revision 6) of the ISMS Management Plan is a significant rewrite of prior revisions. It realigns the described roles and responsibilities with current LBNL operating practices and organizational structure. Revision 6 addresses the issues brought forward in the 2006 Peer and ISM Evaluation Reviews, and takes into account the many changes to worker safety and health program elements placed into PUB-3000 during the implementation of the 10CFR851 Worker Safety and Health Program. It also weaves the Environmental Management System back into the fabric of the overall ES&H program described in the ISMS Management Plan, rather than patching it on top of the Plan. This document is reorganized to follow the basic structure of DOE P 450.4 Safety Management System Policy, and to provide a clear overview of how LBNL manages its ES&H responsibilities. It provides a strengthened foundation for future, continuous improvement.

1.0 Background

1.1 LBNL Description

Lawrence Berkeley National Laboratory (LBNL) is a government-owned, contractor-operated research and development facility managed and operated by the University of California (UC) for the Department of Energy (DOE) under Prime Contract DE-AC02-05CH11231 (Contract 31) (Ref. 1). Contract 31 defines the principles, working relationships, and contractual and legal requirements under which the Laboratory must operate and is held accountable.

The work at LBNL focuses primarily on energy and the environment; biosciences and biotechnology; and fundamental science and applied technology.

Since its inception, Berkeley Lab's location on the hillside above the University of California at Berkeley has offered a unique opportunity for scientific and academic partnerships, and has helped to foster the academic excellence that is the hallmark of the Laboratory's scientific endeavors. Of Berkeley Lab's staff of approximately 4,000, more than 250 faculty/scientists hold joint appointments with UC Berkeley and other UC campuses. In addition, nearly 800 students and postdoctoral fellows are employed each year, along with more than 3,000 participating guests from institutions around the world.

In addition to its fundamental research, Berkeley Lab's research centers and user facilities provide intellectual resources, services, infrastructure, and unique experimental facilities not found anywhere else in the world, including the Advanced Light Source, the National Energy Research Scientific Computing Center, the Energy Sciences Network, the Molecular Foundry, the National Center for Electron Microscopy, and the Joint Genome Institute.

As of January 2007, LBNL work is conducted primarily at the following LBNL locations:

- The LBNL main site
- Donner and Melvin Calvin Laboratories on the UC Berkeley main campus
- The Joint Genome Institute (JGI) in Walnut Creek
- Berkeley Biosciences West (Potter Street) in Berkeley
- The National Energy Research Scientific Computing Center (NERSC) in downtown Oakland
- Other spaces leased for LBNL (e.g., a warehouse in Richmond)

1.2 ISMS Development Overview

The creation and development of Integrated Safety Management (ISM) in DOE Office of Science (DOE-SC) operations has evolved over time. The Price-Anderson Amendments Act

(PAAA) in 1988 is seen as a start in ISM. The DOE initiation of the Necessary and Sufficient Standards concept in 1995, which became the Work Smart Standards (WSS) continued that process. The DOE Safety Management System Policy, DOE P 450.4 (Ref. 2), of October 15, 1996, presented the structure to "provide a formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work." It was "institutionalized through DOE directives and contracts to establish the Department-wide ES&H management objective, Guiding Principles, and Functions." The applicable Department of Energy Acquisition Regulation (DEAR) amendment followed in 1997, and Clause I.86, "Integration of Environment, Safety, and Health into Planning and Execution," became part of the UC DOE contract for LBNL on June 1, 2005.

This Management Plan articulates the institutional requirements for all LBNL operations and provides definition and elaboration of the critical aspects for the understanding and successful implementation of the ISMS.

2.0 Purpose

This LBNL Integrated Environment, Health and Safety Management System Plan (ISM, or Management Plan) provides a formally-approved institutional structure for Integrated Safety Management (ISM) and the Environmental Management System (EMS) developed by LBNL to "…systematically integrate safety and environmental stewardship into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment." It contains the LBNL institutional approach for the incorporation and implementation of the DOE Safety Management System Policy, DOE P 450.4, using written guidance and continued detailed interaction and coordination from DOE-SC and DOE Headquarters (DOE-HQ). It links the Environment Safety and Health Standards Set for LBNL (formerly the Worksmart Standards Set, WSS) set to Laboratory operations by providing direction, guidance, and appropriate safety behaviors needed to conduct all activities and operations in compliance with the EH&S Standards set. With final approval by DOE-SC/BSO, this Management Plan establishes the agreement on the content and processes for ISM implementation and continued utilization at LBNL.

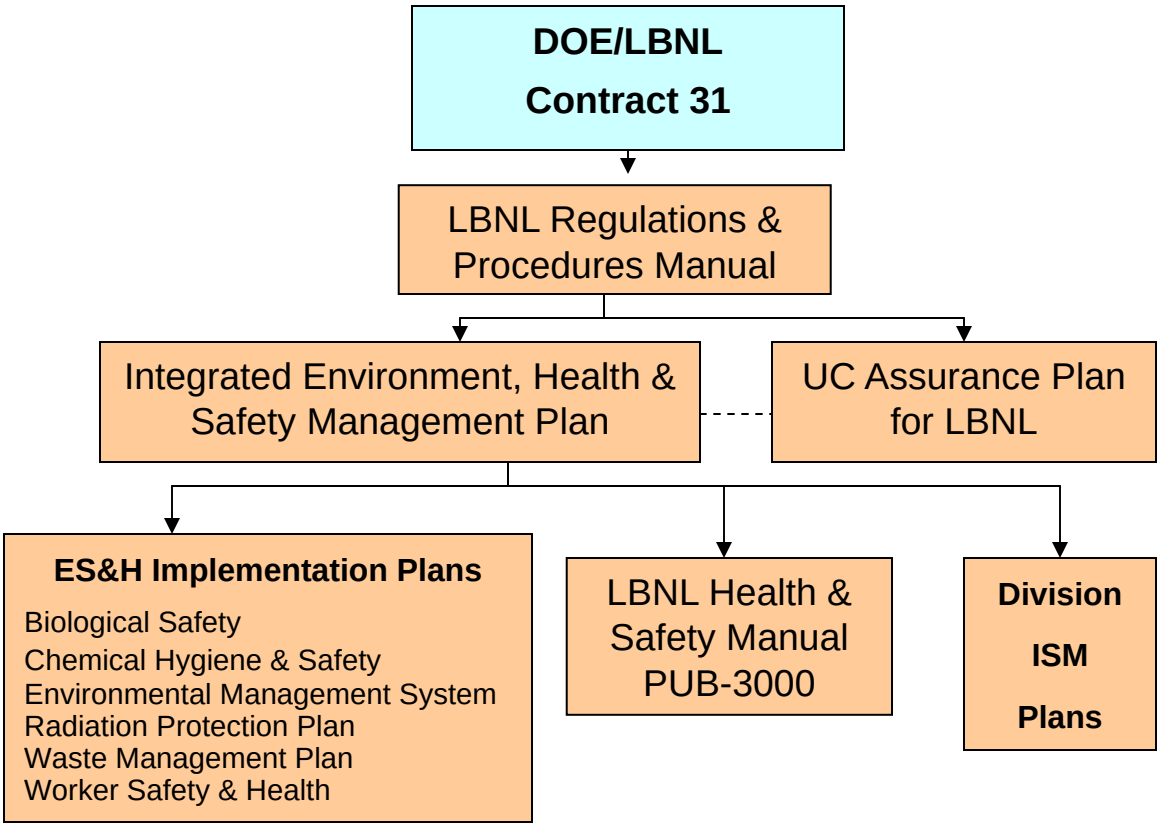

Figure 2.1 LBNL Document Hierarchy: Functional relationship between the DOE contract the LBNL ES&H policy and implementing elements (Rev 12/08)

This Management Plan shows the hierarchy of documentation, organization, and commitment for the implementation and continuance of the LBNL ISM system. It starts with Contract 31 and is formally implemented through the Regulations and Procedures Manual (RPM, PUB-201). Requirements are listed in this Management Plan and are flowed down through the *Berkeley Lab Health and Safety Manual* (PUB-3000), and division-specific documentation to address their particular operations, activities, hazards, and environmental impacts. Key features in the ISM Plan are the use of the graded approach and the concept of "tailoring commensurate with the hazards and environmental impacts," which is critical for practical and affordable implementation. Worker involvement is also important and is actively sought out throughout the work review, authorization, and execution process. The hierarchy of these documents is displayed in Figure 2.1. The most significant publications in this context are listed below.

LBNL/PUB-201, *Regulations and Procedures Manual* (RPM);

http://www.lbl.gov/Workplace/RPM/

LBNL/PUB-3140, *Integrated Environment, Health & Safety Management Plan*

http://www.lbl.gov/ehs/ism/ism_6.pdf

LBNL/PUB-3000, *Health & Safety Manual*;

http://www.lbl.gov/ehs/pub3000

LBNL Environment, Safety and Health Standards Set for LBNL

http://labs.ucop.edu/internet/comix/contract/LBNL/wss_lbnl.pdf

LBNL/PUB-3851, *Worker Safety and Health Program*;

http://www.lbl.gov/ehs/safety/assets/docs/LBNL-PUB-3851.pdf

LBNL/PUB-3180, *Environmental Management System Plan;*

http://www.lbl.gov/ehs/esg/emsplan/emsplan.htm

LBNL/RPP, LBNL Radiation Protection Program for Lawrence Berkeley National Laboratory;

http://ehswprod.lbl.gov/ehswprod-viewdocs/rcm/procedures/RPPrev8a.pdf

LBNL/PUB-5341, *Chemical Hygiene and Safety Plan*;

http://www.lbl.gov/ehs/chsp/index.shtml

Biological Safety Program Manual;

http://www.lbl.gov/ehs/biosafety/Biosafety_Manual/biosafety_manual.shtml

LBNL/PUB-3111, *Operating and Quality Management Plan* (OQMP);

http://www.lbl.gov/ehs/oap/oap_home.htm

LBNL/PUB-3092, *Guidelines for Generators to Meet HWHF Acceptance Criteria*;

http://www.lbl.gov/ehs/waste/wm_pub_3092.shtml

This Management Plan contains the institutional requirements used for all activities at LBNL. Considerations for the ES&H Standards set that were approved and incorporated into the Contract are included. The development, LBNL approval, and delivery of this updated LBNL ISMS Management Plan include ISM and EMS requirements and satisfies a key requirement of Clause I.86 of Contract 31 effective June 1, 2005.

This Management Plan is intended for use by all those in the LBNL workforce. Similarly, it is available to those in UC and DOE organizations with ISM, ES&H, oversight, and Contract responsibilities.

Note: Section 2.0 was revised 12/2008

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3.0 Scope

This Management Plan applies to the work authorized under Contract 31, which, in addition to Research and Development, includes administrative and operational support functions such as business operations, facility construction and maintenance, and security and emergency response activities. LBNL and DOE may mutually agree to develop authorization agreements for specific facilities or activities. All facilities and activities at LBNL not specifically operating under an authorization agreement, or a separately approved ISMS Management Plan, are authorized when following this ISMS Management Plan using the procedures described in PUB-3000 Chapters 1, 6, and 32.

This LBNL ISMS Management Plan presents the institutional requirements and major methods for the implementation of ISMS into all operations and activities at LBNL. It is based on the provisions of Contract 31 with the WSS set.

LBNL accomplishes its institutional role in the DOE ISM Institution/Facility/Activity Process by a combination of Laboratory-wide or infrastructure functions, and division or operating-unit functions. The Laboratory-wide functions are those that affect all LBNL operations and employees. The divisions administer the program funding, have the people, operate the facilities, and conduct the activities. The word “institution” is used instead of “site” or “site-wide” because many LBNL activities occur off the main site, and all LBNL activities must be covered by ISMS.

At LBNL, facilities are defined as portions of buildings, individual buildings or groups of buildings that fulfill a specific purpose. A building manager is appointed for each facility by the responsible Division Director and is readily identifiable and available (e.g., name and contact information is posted). For the areas between buildings, the responsible organization is the Facilities Division. In situations where programmatic activities are outdoors, the cognizant program division has the responsibility for the local area involved. Building manager responsibilities are described in PUB-541.

Many LBNL personnel are assigned to or interact with a wide variety of outside organizations including other DOE sites, the U.S. Department of Health and Human Services (HHS), the Department of Defense (DOD), and other governmental agencies, as well as overseas organizations in various action and inspection capacities. This results in heavy travel traffic, with its own safety hazards and environmental aspects, during the course of Laboratory business. LBNL personnel in these situations have had training in the LBNL ISMS, both institutional and from their divisions, and are expected to appropriately use the process in the conduct of their official activities and assignments. For those at other DOE sites, e.g., DOE-HQ, Brookhaven National Laboratory (BNL), Argonne National Laboratory (ANL), either visiting or on assignment, they are expected to work according to the ISMS and any accompanying agreement structures with the organizations operating at those sites. The Division Implementation Plans and any succeeding documentation provide the specifics for their off-site personnel and connections.

For work carried out in LBNL and University of California at Berkeley (UCB) spaces, a "Partnership Agreement" has been renewed that clarifies responsibilities and oversight of safety requirements. Although the UCB campus and Berkeley Lab safety systems and procedures differ, they are consistent with the principles of integrated safety management and provide equivalent protection (See Reference 9). This is discussed further in Section 5.8.

The Laboratory will periodically review this Management Plan and make feedback and improvement changes as described in Section 8.4. The initial review will occur at or about the anniversary date of its DOE-SC/BSO approval. This review provides a process to evaluate what is working and what needs improvement, and to address any new initiatives and proposals. It permits a comprehensive maintenance of the Management Plan and the opportunity to keep it current. This review goes beyond the action-oriented type of changes that are most likely in the ongoing Change Management Process. The changes that result from this review will be submitted to the established Appendix C, Change Management Process and addressed accordingly. The LBNL Environment, Health, and Safety Division PUB-3000 Manager is responsible for posting the currently approved ISMS Management Plan to the ES&H Web site.

4.0 ISMS System Overview

4.1 Introduction to the Integrated Safety Management System (ISMS)

ISMS is the means by which ES&H requirements are integrated into the planning and execution of work. It consists of two related components: organizational structure (arrangements of people) and underlying principles and operations (functions or processes). DOE and its contractors must systematically integrate ES&H into management and work practices at all levels so that missions are accomplished through effective integration of ES&H management into all facets of work planning and execution. In summary, the overall management of ES&H functions and activities becomes an integral part of mission accomplishment.

DOE has defined seven Guiding Principles that are the fundamental policies for DOE and its contractors to use in the management of ES&H. They are:

1) Line Management Responsibility for Safety
2) Clear Roles and Responsibilities
3) Competence Commensurate with Responsibilities
4) Balanced Priorities
5) Identification of Safety Standards and Requirements
6) Hazard Controls (including adverse environmental impact) Tailored to Work Being Performed
7) Operations Authorization

DOE has defined five Core Functions for integrated ES&H management that comprise the underlying process for any work activity that could potentially affect the public, the workers, and the environment.

1) Define the Scope of Work—Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.
2) Analyze the Hazards—Hazards and environmental aspects associated with the work are identified, analyzed, and categorized.
3) Develop and Implement Hazard Controls—Applicable standards and requirements are identified and agreed upon, controls are established to prevent and/or mitigate hazards, environmental aspects are identified and evaluated for reduction, the ES&H envelope is established, and controls are implemented.
4) Perform Work Within Controls—Readiness is confirmed and work is performed within the ES&H envelope established.

5) Provide Feedback and Continuous Improvement—Feedback information on the adequacy of controls is gathered, the efficiency of reducing environmental impacts is researched, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur.

These five Core Functions are applied as a continuous cycle with the degree of rigor appropriate to address the type of work activity and the hazards and/or environmental aspects involved. The ISM Work Cycle, as displayed in Figure 4.1, shows the continuous relationship of the functions.

Figure 4.1 Basic ISM Work Cycle.[2]

4.1.1 Implementation

Implementation of the ISM Work Cycle takes place at multiple organizational levels, including the institutional level, the division or facility level, the activity level, and the individual level.

The Laboratory's ISMS functions performed at the institutional level are: (1) clarify missions; (2) establish ES&H policies, objectives, and expectations; (3) select a tailored set of ES&H standards; (4) generate and authorize use of PUB-3000, other direction, and guidance; and (5) assess overall system performance. Much of the information produced at the institutional level is used to set expectations that ES&H functions are performed during programmatic and institutional work at the facility and activity levels.

To benefit from both locally developed processes and controls and institutional consistency, the Laboratory uses the DOE Guiding Principles and Core Functions and the Environmental Management System (EMS) principles in managing division and activity work planning and execution while retaining a required level of institutional uniformity through a set of division-level ISM implementing plans. Doing so results in practices and controls tailored to both activity-level and division or facility-specific management needs, and meets uniform expectations at the institutional level.

At the division or facility level, ISM ensures safe and environmentally responsible operations of the facility's infrastructure and activities. This means that the DOE Guiding Principles and Core Functions and the EMS principles of ISM are followed not only in operating the facility, but also in ensuring the activities performed in that facility are within the facility's ES&H envelope and are compatible with one another. For this reason, facility-management concurrence is required before activities can start within the facility.

Although the Laboratory's ISMS activity-level functions involve many of the same positions and organizations as those at the institutional level, the information generated and shared is different. At the activity level, management is concerned about such items as technical approaches; reaching specific work objectives; resources and schedules; hazards and environmental aspects associated with the specific work; acceptable controls for protection; hardware, facilities, methods, environment, and staff; and authorization to proceed.

4.1.2 Improvement

Organizational structure, functions, and information-sharing are all necessary for the successful management of ES&H integration. LBNL, UC, and DOE-SC/BSO develop objective measures that gauge the Laboratory's management system performance. Mutually developed ES&H performance measures are important ISMS measures of effectiveness. In addition, objectives and targets are established by LBNL to reduce the impacts of the Laboratory's significant environmental aspects. Plans are developed and put into place with the overall objective of continuous improvement in LBNL's environmental performance. These are measured and reported annually to the senior Laboratory management.

4.2 LBNL ES&H Policy Statement

It is the policy of Lawrence Berkeley National Laboratory to perform all work safely with full regard to the well being of workers, guests, the public, and the environment.

Keys to implementing this policy are the following core safety values:

The institution demonstrates a strong commitment to safety by integrating safety into all facets of our work.

- Managers and supervisors are actively involved and demonstrate leadership in performing work safely.
- Individuals take ownership for safety and continuously strive to improve.
- Individuals demonstrate an awareness and concern for the safety of others.

4.3 Philosophy

LBNL's overall ES&H philosophy is as follows:

1) Accidents are preventable through close attention to potential hazards and appropriate action by each individual and the responsible organizations.

2) Responsible stewardship of LBNL's environmental resources is an integral part of LBNL's ISMS resulting in the reduction of environmental impacts.

3) Managers, supervisors, safety line managers, and work leads are responsible for ensuring that an adequate system is in place to carry out work safely while also being environmentally responsible. An identifiable line management chain is ultimately responsible for each work activity.

4) Each supervisor and safety line manager is expected to ensure that all individuals reporting to him or her understand the ES&H expectations, governing work controls, and the means by which they can safely and successfully perform their assignments while providing responsible environmental stewardship of the environmental resources in their care.

5) Each individual is directly responsible for ensuring his or her own safety and environmental stewardship, looking out for their fellow workers, and promoting a safe, healthful, and environmentally sound workplace and community. Individuals are offered the opportunity for involvement in setting policy, establishing coordinating processes, and in assessment and continuous improvement activities. All individuals are to follow ES&H-related work instructions. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the employee is responsible for notifying the appropriate individuals and assisting, as appropriate, in modifying the work instructions.

6) Employees at all levels will be held accountable for their performance with respect to ES&H.

4.4 Overarching ISMS Responsibilities

It is each individual's responsibility to: (1) understand the Laboratory's ES&H policy and to participate in its pursuit; (2) to determine in concert with others the best way to achieve the ES&H goal in conformance with Laboratory requirements and to participate in the development of Laboratory policy and procedures in a constructive manner; (3) to use appropriate available resources; and (4) to ask for any help necessary to ensure a safe work environment and to reduce his or her environmental impact, while performing their broad set of job responsibilities and pursuing all technical, administrative, or craft objectives.

Managers, supervisors, and work leads must specify the technical, administrative, craft, and ES&H goals; assign specific responsibilities; appropriately define and manage ES&H issues; provide the necessary resources required to accomplish the objectives; assure compliance; monitor, measure, and evaluate performance against targets where applicable; and reward each individual appropriately.

To achieve the ES&H goal, work at LBNL will be done using PUB-3000 with the direct assistance and support of the EHSD Subject Matter Experts and the Division Liaisons.

Divisions must ensure that work is performed consistent with the requirements and expectations specified in the institutional ISMS Management Plan. The authorizing organization (i.e., the Division Director) is responsible for authorizing specific work activities. Authorizing organizations are distinguished by having control of the funding. Organizations authorizing work and the associated management chain are responsible for ensuring that all work in their purview is conducted safely while providing responsible environmental stewardship of the environmental resources in their care. Individuals are responsible for following ES&H safe work instructions, including signage, Job Hazard Analysis (JHA) requirements and work procedures.

4.5 Institution and Division ISMS Interface

This Management Plan defines the ISM core philosophy, requirements, and parameters for the LBNL workforce and work environment. The requirements established in this Management Plan serve as the basis for Chapter 1 (*General Policy and Responsibilities*) in PUB-3000 and the division ISM Implementation Plans. In turn, these documents define in detail the Laboratory's ES&H policies, practices, and individual responsibilities. The WSS set now in Contract 31 is the currently applicable ES&H standards, and serves as the basis for PUB-3000.

All LBNL work activities must be performed in conformance with the provisions of PUB-3000 and the division ISM Implementation Plans with the assistance of ES&H Subject Matter Experts. Individuals are responsible for following all ES&H-related work instructions. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the employee is responsible for notifying the appropriate individuals and assisting, as appropriate, in modifying the work instructions. Because of the significant differences in the nature of operations across the Laboratory, each Division Director has the responsibility for ensuring that

organizational missions are carried out in conformance with the philosophy, parameters, and requirements defined in this Management Plan and PUB-3000. To facilitate this outcome, each Division Director has the responsibility for ensuring that ISM requirements are implemented within his or her division. Division-specific ISMS Implementation Plans must be used for this purpose. A template for Division ISMS Implementation Plans is found in Appendix A. Regular reviews of each division's ISMS implementation are undertaken to assure continued adherence of each division's operations to the philosophy, requirements, and parameters established in this Management Plan.

4.6 Structure for ES&H Management in LBNL Operations

The Division Directors have the direct responsibility and authority for conducting the Laboratory's programmatic work, and primary responsibility for applying and fulfilling the Laboratory's ES&H policies in the performance of that work. Division Directors must be aware of statutory, regulatory, and contractual ES&H requirements applicable to their operations and facilities. In meeting their obligations, each Division Director can simultaneously function in one or more of the following four operational functions: Program Division Director, Home/Payroll Division Director, Facility Division Director, and Services Division Director. Authorities for the different operational functions vary, but the Program Division Director has the primary responsibility. For many mission projects the Program Division Director is also the Home/Payroll, Facility, and Services Division Director.

Division Directors have Safety Coordinators and Safety Review Committee members on their staffs to support the division's ES&H activities. The LBNL Safety Review Committee (SRC) is a council composed of all of the divisions' SRC members, and provides high-level counsel to the Laboratory Director. The ES&H Division assigns Liaisons to each division and the Director's Office. In addition, experts from outside the Laboratory can be called in when needed. Roles and responsibilities of EHSD Liaisons, Division Safety Coordinators, and the SRC are provided in sections 5.3.8, 5.4, and 5.5 of this document, and are expanded upon in PUB-3000,Chapter 1.

4.7 ISMS Development and Continuous Improvement Process

4.7.1 ISMS Preparation

The initial LBNL ISMS Management Plan was developed, verified, and authorized in 1999 after significant foundational work was completed. The initial WSS standards list was developed and added to the DOE contract. Each work activity was identified and evaluated for hazards as part of the initial Integrated Hazard Assessment (IHA) with an accompanying IHA database. The hazards were cataloged and ranked in another database that has become the current Corrective Action Tracking System (CATS).

The underlying processes associated with the hazard- and impact-analysis elements of ISMS have matured. The IHA database has been superseded by the Hazards, Equipment, and

Authorizations Review (HEAR) system; this Web-based tool allows division users direct access to information relevant to the identification and evaluation of hazards associated with their operations. The emphasis is on division-user maintenance and use of the data. The Job Hazard Questionnaire (JHQ) has been enhanced by the addition of the Job Hazard Analysis (JHA) process. Every worker must have a current Individual Baseline JHA authorizing regular and routine work that she/he may perform.

Revision 5 of the Management Plan focused on the development and inclusion of the Environmental Management System, required by DOE order, into the Plan. The EMS was developed, and appropriate references were layered on top of the existing ISM Management Plan outline and structure.

The current version (Revision 6) of the ISMS Management Plan is a significant revision of the prior versions It realigns the described roles and responsibilities with current LBNL operating practices and organizational structure. The revision address the issues brought forward in the 2006 Peer and ISM Evaluation Reviews. It takes into account the many changes to worker safety and health program elements placed into PUB-3000 during the implementation of the 10CFR851 Worker Safety and Health Program rule. It also weaves the Environmental Management System back into the fabric of the overall ES&H program described in the ISMS Management Plan, rather than patching it on top of the Plan. This document is reorganized to follow the basic structure of DOE P 450.4 Safety Management System Policy outline, and to provide a clear overview of how LBNL manages its ES&H responsibilities. It provides a strengthened foundation for future continuous improvement.

4.7.2 Future Evaluations of the ISMS

As management and organizational changes take place at the Laboratory, any new divisions will need to perform an ISM review to evaluate their compliance status with this Management Plan, and develop their division-specific documents with the associated division gap analysis. The Plan will be reviewed and appropriate revisions will be made on an annual basis as described in Section 8.4.

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5.0 Environment, Safety, Health, and Assurance Organization Responsibilities, Services and Interfaces

5.1 Introduction

This Management Plan addresses all aspects of the ES&H program in the Integrated Safety Management System at LBNL; however, the interfaces between specific environment, safety, and health organizations deserve additional attention. This section addresses the Laboratory's Environment, Health, and Safety Division's (EHSD) charter, organization, and administrative responsibilities and authorities. It also describes EHSD's relationships with other LBNL organizations that participate in the overall ES&H process, including UC Berkeley campus. It should be noted that DOE addresses the subject area of Environment, Safety, and Health as "ES&H." It should be distinguished from the LBNL division name of the Environment, Health, and Safety Division (EHSD).

5.2 Environment, Health, and Safety Division (EHSD)

5.2.1 EHSD Charter

The primary objective of EHSD is to provide the necessary support to LBNL for protecting its workers, the public, and the environment from adverse consequences, and for improving ES&H performance.

- EHSD supports and acts as a partner with line management as it meets direct responsibilities to ensure that the protection of workers, the public, and the environment is integrated into the primary research and support functions of each division or unit.
- EHSD supports and provides expertise directly to each LBNL worker who seeks ES&H advice or help, or voices a concern.

In carrying out its primary mission, EHSD is committed to seven basic goals:

- Provide employees with a safe workplace.
- Design and operate facilities and research activities that are safe, conserve resources, and minimize adverse impacts on public health and the environment.
- Procure and use materials that prevent pollution or that minimize wastes, and which can be disposed of properly.
- Promptly communicate to affected persons the known hazards of our activities and the related methods necessary for safety and health protection.

- Maintain a positive, proactive, and constructive relationship with our neighbors in the local community, representatives from external regulatory agencies and the Department of Energy, and other stakeholders.
- Use available technology, engineered safeguards, and responsible science to mitigate all significant risks arising from its research and related activities.
- Train and develop staff to meet the commitments to a safe workplace, and minimize adverse impact on public health and the environment.

5.2.2 EHSD Organization and Administrative Responsibilities and Authority

EHSD is organized into seven functional areas: Security & Emergency Operations, Waste Management, Radiation Protection, Environmental Services, Health Services, Industrial Hygiene, and Occupational Safety. Security & Emergency Services includes the Fire Department, which is contracted to Alameda County. Environmental Services includes Environmental Restoration and Radiation Protection, including Technical Services. Group Leaders of the seven functional areas report directly to the Division Director.

The group leaders are responsible for managing their organizations, including planning, staffing, and budgeting, and for developing and implementing Berkeley Lab policies and procedures in their functional areas. The Division Director and group leaders represent EHSD in its communication with internal and external organizations and individuals on matters of major significance to the success of LBNL.

To enhance service, EHSD Liaisons are designated for each Laboratory organization. These individuals are considered points of contact between a customer division (typically via a Division Safety Coordinator) and EHSD. They function as troubleshooters, facilitators, and problem solvers. Support services include providing technical consultation and responsive customer service; partnering with customers to implement cost-effective injury and illness prevention/loss control programs; assisting line management with Division ES&H (Safety) Plans; and providing quarterly ES&H briefings to customer division management. This relationship does not preclude any Berkeley Lab employee from directly approaching an EHSD professional/subject matter expert (SME) to address a particular issue or need.

Current information regarding EHSD points of contact, policies and procedures, and other ES&H-related information is maintained on the EHSD web site at:

http://www.lbl.gov/ehs/

5.3 EHSD Functional Groups

5.3.1 Security & Emergency Operations

The mission of the Security & Emergency Operations Group is to provide integrated and efficient safety, emergency, and security services to all employees, guests, and users at the main Berkeley site and off-site facilities, and to promote continuous improvement of the Laboratory's scientific and supportive activities. The core competencies of the group are:

- Emergency response to include fire suppression, emergency medical and hazmat response services
- Emergency planning, drills, and exercises
- Fire protection engineering
- Law enforcement services
- Site access control
- Physical security
- Parking permit and badging services
- Self-assessment and quality assurance of EHSD activities

Operational guidance for these functional program areas are found in PUB-3000 (chapters 9 and 12) and the Integrated Safeguards and Security Management Plan (ISSM) for the Lawrence Berkeley National Laboratory available on the Web at:

http://www.lbl.gov/ehs/security/ufva/issm/ISSMfinal.html.

5.3.2 Waste Management Group

The Waste Management Group (WMG) is responsible for managing radioactive, mixed, hazardous, medical, and universal wastes from the generator site to final disposition including interim storage at the Hazardous Waste Handling Facility (HWHF). These responsibilities include safe collection, accumulation, eventual transport, and disposal of waste. Waste generators are provided with training and oversight applicable to the waste streams generated to ensure that they can discharge their responsibilities in meeting the policies and purpose of WMG. To this end, WMG provides advice and counsel to Berkeley Lab personnel on compliant management of waste in the generating area.

LBNL policies requiring that all operations be performed in a safe and responsible manner apply to waste generation and handling operations. LBNL Waste Management policies include the following guidelines:

- Comply with all laws and regulations governing hazardous, radioactive, mixed, universal, and medical/biohazardous wastes.
- Remove these wastes from generator areas safely and efficiently.
- Minimize the wastes generated at Berkeley Lab.

- Operate the HWHF in a manner that complies with all permits, safety analysis, and regulations.
- Advise and consult with waste generators during the work-planning process to minimize waste and to ensure safe accumulation and handling of waste, as needed.

WMG incorporates all work smart standards appropriate to its ultimate goal of providing a healthy, safe, and compliant workplace. All activities follow the principles of ISMS and may be called on to address specific issues as noted in the Institutional or Division ISM plans. Specific processes and procedures are identified in a variety of documents such as PUB-3000, and relevant WMG documents such as the HWHF RCRA Part B permit, the HWHF Safety Analysis Document, the HWHF Health and Safety Plan, the WMG Quality Assurance Plan, and the WMG Radioactive Waste Management Basis.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Waste Management Group are delineated in PUB-3000, Chapter 20; Guidelines for Generators to Meet HWHF Acceptance Criteria (PUB-3092); operational and activity policy and procedure documents; and Division ISM Implementation Plans. To ensure that responsibilities for generating and handling waste are understood, the guidance in PUB-3000 is supplemented by required waste-specific training and consultation on waste issues as needed by individuals, groups, and major projects including construction and renovations.

5.3.3 Radiation Protection Group

The Radiation Protection Group (RPG) supports research programs by facilitating safe and compliant use of radiation sources at Berkeley Lab, and provides technical services to support this effort.

The RPG provides effective leadership to LBNL by promoting compliance with applicable DOE Orders and Federal Rules/Regulations, and overseeing a radiological and environmentally safe working environment for all LBNL employees, contractors, and guests in accordance with Integrated Safety Management (ISM) principles. The RPG staff ensures operational adherence to the LBNL Radiation Protection Program (RPP) and oversees implementation of RPG programs including the Radiological Work Authorization (RWA) and Radiological Work Permit (RWP) Programs, Sealed Source Authorizations (SSA), Radiation Safety Training, X-ray, Nuclear Material Management Safeguards and Security (NMMSS), Transportation, General License Authorizations (GLA), Low Activity Source (LAS), etc. The Group interacts with LBNL management, researchers, project scientists, and EHSD personnel to ensure that EHSD objectives are integrated into program operations, and that EHSD recommendations have a sound technical and scientific basis. The Group Leader serves as Radiation Control Manager (RCM) to provide guidance to senior management on matters pertaining to radiation safety, support to the Radiation Safety Committee (RSC) for the review of authorizations, and reporting and data analyses in support of the ALARA process.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Radiation Protection Group are delineated in PUB-3000 (Chapter 21).

5.3.3.1 Technical Services

The Technical Services (TS) organization is responsible for developing, planning, and managing all aspects of TS initiatives and technical programs. It oversees all technical, management, quality assurance (QA), production, customer relations and service, personnel, EHS, compliance, and budget functions for TS, which includes internal and external dosimetry, instrumentation, telemetry, radioanalytical labs, and accelerator health physics. It provides managerial and technical leadership to projects of division-wide importance. It works with EHSD managers and Group Leaders and staff across the Laboratory, at other DOE/SC labs, in UCOP, and in BSO to develop and implement solutions to complex problems of importance to the division and the Laboratory. It is also responsible for ensuring that TS programs and operations are in compliance with applicable policies, procedures, and regulations as stipulated in the LBNL RPP and as communicated by the Radiation Control Manager (RCM).

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Technical Services organization are delineated in PUB-3000 (Chapter 21).

5.3.4 Environmental Services Group

The Environmental Services Group (ESG) is responsible for managing the environmental protection programs designed to reduce the Laboratory's impacts on air, water, soil, and other environmental media, and to conserve natural resources. These programs include:

- Air-Quality Protection
- Environmental Management System
- Environmental Radiation Protection
- Environmental Restoration
- Hazardous Materials Management
- Stormwater Protection
- Wastewater Discharges

It is the Laboratory’s environmental goal to perform work in a manner that protects the health of the public and preserves the quality of the environment. The Laboratory is committed to:

- achieving compliance with all applicable laws, regulations, and requirements;
- minimizing waste and preventing pollution;
- aggressively correcting and cleaning up existing environmental problems; and
- continually improving environmental performance.

ESG is responsible for developing these programs and ensuring that they are effectively managed, implemented, and improved. Effective implementation and improvement of these programs are achieved by means of the LBNL Environmental Management System (EMS, PUB-3180). The EMS plan requires that a continual cycle of planning, implementing, evaluating, and improving processes be performed to achieve the purpose and goals of each of the programs comprising the comprehensive environmental protection program. Each year under this plan, environmental aspects are identified, and their impacts to the environment are evaluated. Objectives and targets are developed for each aspect that is determined to be significant.

Environmental Management Programs (EMPs) are prepared to document actions necessary for reducing certain environmental impacts and for identifying responsible parties and associated target deadlines for each action. Annually, an internal assessment is performed to evaluate the progress of the EMS in sustaining and improving environmental protection performance, and an LBNL senior management team reviews the results. At least once every 3 years, a third-party audit is performed to validate that the EMS is being implemented and is performing as stipulated in the EMS Plan. Technical Assurance Assessment Plans have been prepared for each program. These describe the elements of each program that undergo a technical review on a quarterly basis.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Environmental Services Group are delineated in PUB-3000 (Chapter 11). The responsibilities of the environmental protection program are stipulated in the EMS Plan and in the operational policy and procedure documents specific to each environmental protection program.

5.3.5 Health Services Group

The LBNL Health Services Group provides comprehensive occupational medicine services to LBNL full-time employees, part-time employees, or all employees who participate in a medical surveillance program. Health Services policy ensures that employees are physically able to perform their assigned duties, and that employees with an occupational illness or injury receive medical care and rehabilitation, and provides for emergency treatment for serious illnesses or injuries. The policy also encourages all employees to maintain their physical and mental health, and assists in maintaining a healthy and safe work environment. Health Services also supports LBNL's provision of employee benefits through the Disability Management Program, which provides counseling and helps injured and ill employees rehabilitate and return to work safely. The Human and Animal Regulatory Committees Office in Health Services coordinates the Lab's animal welfare and human subjects protection programs, including the associated oversight committees.

Health Services is available to all employees hired for 30 days or more, or any employee subject to a medical surveillance program. First Aid and/or emergency services may be provided to subcontractors and guests until they are referred to their employer for industrial injury care or their personal physician for non-industrial illnesses.

The Health Services Clinical Program manages medical surveillance; provides preplacement, termination, and periodic health evaluations; provides first aid, initial assessment of injuries and illnesses, and appropriate referrals; provides case management; and contributes to health promotion through its Wellness Program. The program staff works closely with other EHSD staff to ensure the existence of an effective Medical Surveillance Program, and with staff from Human Resources to help implement the Laboratory's Return-to-Work Policy.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Health Services Group are delineated in PUB-3000 (Chapter 3). The responsibilities of

the Committee for Protection of Human Subjects (CPHS) and the Human Subjects Committee (HSC), both supported by the Health Services Group, are given in PUB-3000 (Chapter 22).

5.3.6 Industrial Hygiene Group

The Industrial Hygiene Group provides industrial hygiene services to support the Lab's mission. This includes anticipation, recognition, evaluation, and control of health hazards that may be found in the workplace. Its activities support illness prevention and loss control systems for customer service and technical consultation to achieve Integrated Safety Management. Core program functions provided to support the Division and the Laboratory include the Chemical Hygiene and Safety Program, the Biosafety program, and other hazardous material control programs.

The Group's technical occupational health focus is on preventing illness resulting from exposure to toxic materials or harmful physical agents such as noise or non-ionizing radiation. It provides comprehensive technical safety support including chemical hygiene; industrial ventilation; asbestos, beryllium, and lead control; respiratory protection and laser safety.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Industrial Hygiene Group are found in PUB-3000 (Chapter 4). Many hazard specific control programs are found as control program documents under this chapter (e.g., noise, asbestos, and beryllium). Additional technical program descriptions are found in PUB-3000 chapters 7, 13, 16, and 26.

5.3.6.1 Chemical Hygiene and Safety Program

LBNL policy requires that all operations be performed in a safe and responsible manner. This includes maintaining personnel exposure to chemical agents within acceptable exposure limits. This policy further requires that exposures be minimized by the use of hazard elimination, engineering controls, personal protective equipment, and administrative controls. It is a requirement of employment and a precondition for using Laboratory facilities that every employee, guest, visiting scientist, or contractor working on- or off-site, be familiar with and comply with LBNL safety standards.

The purpose of the Chemical Hygiene and Safety Plan (CHSP) is to provide guidance to all LBNL supervisors, employees, contractors, visitors, and guests for the safe handling, use, and storage of hazardous materials in laboratory, shop, and office settings. This plan identifies LBNL, Division, Department, supervisor, and employee responsibilities, and establishes procedures for identification, evaluation, and control of hazardous materials.

The scope of the CHSP includes the requirements of the Federal Occupational Safety and Health Administration (OSHA) "Hazard Communication Standard" (29 CFR 1910.1200) for employees in shop and office settings, and the OSHA "Occupational Exposures to Hazardous Materials in Laboratories" (29 CFR 1910.1450) for laboratory employees.

The Hazard Communication Standard was developed to inform employees who work with hazardous chemicals of the risks associated with those chemicals. A separate standard (the "Laboratory Standard") was specifically developed for laboratory operations, because these

environments often differ from industrial and office settings in the use and handling of hazardous chemicals.

LBNL combined both of these federal OSHA requirements into the Chemical Hygiene and Safety Plan in order to establish a standardized framework for chemical hygiene practices, information dissemination, and training at LBNL, regardless of the occupational setting.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the CHSP are delineated in broad categories in the Plan, and are tailored to specific needs in the PUB-3000 (Chapters 4, 6, 7, 12, 13, 19, 24, 26, 32), operational and activity policy and procedure documents, and Division ISM Implementation Plans.

5.3.6.2 Biosafety Program

LBNL policy requires that work with biological material or agents be conducted in a safe, ethical, environmentally sound, and compliant manner using the principles and functions of ISM and work authorization. Work will be performed in this manner so that personnel and the environment will be protected from exposure to biological agents or materials that may cause illness to workers or people, or damage to agriculture or the environment.

The purpose of the Biosafety Program is to provide requirements, guidance, responsibilities, and implementation systems to LBNL supervisors, employees, guests, and contractors for the safe use, storage, and inactivation of potentially hazardous biological agents or materials in laboratory or other work environments. The Biosafety Program structure, requirements, guidance, and implementation systems are detailed in Chapter 26 (Biosafety) of PUB-3000 and the Web-based Program description and Biosafety Manual.

The Biosafety Program includes the following goals:

- Prevent illness to workers or other people from exposure to biological agents or materials used at LBNL;
- Prevent agricultural or environmental damage from biological agents or materials transferred or disposed by LBNL;
- Provide requirements and implementation systems for administrative, engineering, and personal protective equipment biosafety controls;
- Provide required biosafety training;
- Provide an environment for high-quality biological research while maintaining a safe workplace; and
- Comply with applicable federal, state, and local requirements, regulations, and guidelines.

The Biosafety Program covers a broad range of organisms, cells, viruses, and other materials of biological origin that pose differing levels of risks to plants, animals, or humans. Biological materials of greater concern may include, for example, infectious agents; human blood, cells,

cell lines, or derived tissues; recombinant genomic materials; select agents and biotoxins; and certain animals, plants, or soils.

The requirements and controls needed to use these biological agents and materials are consolidated in Chapter 26 (*Biosafety*) of PUB-3000, and the Web-based Program description and Biosafety Manual. These requirements and controls are based on federal and state government, contract, and funding biosafety standards and regulations that are adopted into the Work Smart Standards or implementation assumptions. Standards and regulations include, for example, OSHA Bloodborne Pathogens Standard, NIH Guidelines for Research Involving Recombinant DNA Molecules, CDC-NIH Biosafety in Microbiological and Biomedical Laboratories, select agent regulations, and the DOE Worker Health and Safety Program.

Line management and researchers are expected to define, evaluate, control, and authorize their biological work. This is accomplished with the assistance and oversight of the Institutional Biosafety Committee (IBC), EHSD, and Division line management and ES&H personnel. The biological work review, documentation, and authorization process is used to facilitate and document the above process. Additional duties, roles, and responsibilities are defined in PUB-3000, the Biosafety Manual, Division ISM plans, and operation-specific biological use documentation.

5.3.7 Occupational Safety Group

The Occupational Safety Group provides safety engineering and occupational safety services to support the Lab's mission. This includes injury prevention and loss control systems for customer service and technical consultation to achieve Integrated Safety Management. The Group provides the technical support required for administration of the Work Smart Standards set, ISMS Management Plan, PUB-3000, and the Worker Safety and Health Program. Core program functions provided to support the Division and the Laboratory include Accident Investigation services; Injury and Illness recordkeeping and reporting; and noncompliance/deficiency tracking, evaluation, and funding.

The Group’s technical occupational safety focus is on preventing injury resulting from acute trauma, usually from failure or misuse of engineered systems. It provides comprehensive technical safety support including electrical safety, construction safety, shop safety, fall protection, contractor safety, seismic safety, accident investigation, transportation safety, machine guarding, material handling safety, and ergonomics.

Duties, roles, and responsibilities of all LBNL personnel and staff in achieving the expectations of the Occupational Safety Group are found in PUB-3000 (Chapter 5). Technical program descriptions are found in PUB-3000 chapters 8, 10, 17, 18, 19, 23, 25, 27, and 28.

5.3.7.1 Worker Safety and Health Program

Title 10 of the Code of Federal Regulations (CFR), Part 851 (10 CFR 851), Worker Safety and Health Program, requires Department of Energy (DOE) sites to establish a worker protection program that will reduce or prevent the potential for injuries, illnesses, and accidental losses by providing workers with a safe and healthful workplace. The LBNL Worker Safety and Health Program (PUB-3851) describes the Worker Safety and Health Program (WSHP) that has been

developed at Lawrence Berkeley National Laboratory to comply with 10 CFR 851. The Program includes the regulations and standards specifically required by 10 CFR 851, and elements of the LBNL Integrated Safety and Management System.

The worker safety and health standards and regulations required by 10CFR851 have been adopted by the Work Smart Standards process and flowed down through PUB-3000. Provisions for the review of subcontractor activities “at any tier” have also been developed and implemented through this mechanism. An element of the WSH Program is to review weekly those items reported through the Corrective Action Tracking System (CATS), and evaluate them for noncompliance with 10CFR851 requirements. Identified noncompliances are then screened to determine if they meet the thresholds for reporting to DOE through the Noncompliance Tracking System operated in conjunction with the Price Anderson Amendments Act enforcement process of the DOE Office of Enforcement.

5.3.8 EHSD Liaisons

EHSD Liaisons are designated for each assigned Laboratory division or Laboratory facility. They provide a convenient, single EHSD point of contact between a customer division (typically via the Division Safety Coordinator and the EHSD), and function as the troubleshooter and problem-resolution facilitator. This relationship does not preclude any Laboratory employee from directly approaching an EHSD professional/subject matter expert to address a particular issue or need. The EHSD liaison serves as the designated point of contact to assigned divisions or Laboratory facilities. They respond to division personnel requests that the appropriate technical support be provided to implement and interpret Laboratory ES&H policies. They are required to know the customer division’s work activities, personnel, and associated hazards, and assist in hazard identification and the development of controls appropriate to the hazard and work being performed.

The complete list of the duties, roles, and responsibilities of the EHSD Liaison is delineated in PUB-3000, Section 1.3.2.10 (*EHSD Liaisons*).

5.4 Division Safety Coordinators

Division Safety Coordinators (DSCs) report directly to their division director or deputy. The Division Safety Coordinator (DSC) is responsible for administering the division’s ES&H program. Their duties include supporting division line managers or work leads in the execution of their safety responsibilities. They help integrate safety into all work activities and promote a safety culture where everyone takes responsibility for their own safety and looks out for the safety of others. They serve as a point of contact for all division staff regarding the implementation and interpretation of ES&H policies, procedures, and programs. They serve as a member of their Division Safety Committee (or other equivalent organization). They are typically responsible for maintenance of their division’s ISM Implementation Plan.

The complete list of the duties, roles, and responsibilities of DSCs is available in PUB-3000 (Section 1.3.2.9 Division Safety Coordinators).

5.5 Safety Review Committee

The Safety Review Committee (SRC) performs research for and makes recommendations to the Laboratory Director on the development and implementation of Environment, Safety & Health (ES&H) policy, guidelines, codes, and regulatory interpretation. It conducts reviews of special safety problems and provides recommendations for possible solutions if requested to do so by the Laboratory Director. The SRC also provides advice and counsel to the Laboratory Deputy for Operations by reviewing appeals from the Laboratory Divisions when any Division and EHSD do not agree on the interpretation or application of criteria, rules, or procedures. Such advice and counsel may include options for a resolution.

In addition, the SRC chair, in cooperation with the Office of Contract Assurance (OCA), is responsible for scheduling and conducting the portion of institutional self-assessment known as Management Environment, Safety & Health (MESH) reviews. These reviews are designed to ensure management systems consistent with Integrated Safety Management (ISM) are in place in all Laboratory divisions, and that these systems are leading to effective implementation of the Laboratory's ES&H program. MESH reviews of each division and are conducted every two to four years by an SRC subcommittee. All members of the SRC are expected to serve on MESH subcommittees.

The SRC Chair is appointed for a term of 3 years by the Laboratory Director. Members are nominated by division directors and department heads, and are appointed by the Laboratory Director for a term of 3 years. Staff support for this committee is provided by the EHSD Division.

The SRC reviews and approves changes to ES&H Policy, as defined in PUB-3000, and any references or related documents that are necessary to implement ES&H policy at LBNL. The SRC Chair publishes a list of these “applicable” documents annually on the committee’s Web site. For matters of policy where the SRC chair determines that additional management review is necessary, the SRC refers proposed policy changes to the Laboratory Director with specific recommendations for review and approval.

The duties, roles, and responsibilities of the SRC are delineated in PUB-3000, Section 1.3.2.11.6 (*Safety Review Committee*). Their activities are described in detail on their Web site:

http://www.lbl.gov/ehs/src/index.shtml

5.6 Radiation Safety Committee

The LBNL Radiation Safety Committee (RSC) is appointed by, and reports to, the Laboratory Director and is responsible for advising LBNL Management on all matters related to occupational and environmental radiation safety. The Radiation Safety Committee reviews and recommends approval of radiation safety policies and guides the EHSD and radiation user divisions in carrying out these programs. The scope of its actions generally is in issues of broad

institutional concern and impact, or areas of potential high consequence either in terms of safety or institutional needs.

The RSC provides a forum to ensure that important radiation safety issues receive appropriate, balanced, and expert review before being acted upon.

The RSC is composed of not more than ten nor less than five members exclusive of ex-officio members. Members are appointed by the Laboratory Director for three year renewable terms on the basis of knowledge of the principles and practices of the control of radiation hazards and on experience and management in the use of radioisotopes and/or radiation producing machines. The membership reflects the diversity of scientific disciplines using radiation at LBNL. The LBNL Radiological Control Manager (RCM) serves as a full member and acts as the liaison with other Berkeley Lab programs. In addition, the LBNL Safety Review Committee provides at least one full or ex-officio member who provides liaison to that body to ensure integration with larger institutional safety issues.

The duties, roles, and responsibilities of the RSC are delineated in detail on their Web site:

http://ehswprod.lbl.gov/unc/rpg/charter.shtml

5.7 The Office of Contract Assurance

The Office of Contract Assurance (OCA) provides oversight of LBNL's management systems and operating processes to ensure that compliance, operational support for science, best management practices, and continuous improvement are achieved at LBNL. The OCA is a fully independent and internal assurance organization, and is authorized to have unrestricted access to personnel, records, and other information sources necessary to carry out its duties.

At the direction of the Director of Institutional Assurance, the Office of Contract Assurance coordinates independent third-party reviews in areas of business, finance, operations, ES&H, as well as other selected areas. The OCA will oversee all LBNL operations and business systems utilizing an internal control system, which is designed to assure UC and LBNL management that operations are effective and efficient, financial reporting is reliable, and both are in compliance with applicable laws and regulations.

OCA interfaces with EHSD and the SRC in managing, coordinating, and supporting ES&H assurance activities, in particular the Division Self Assessment Program; the Management of Environment, Safety, and Health (MESH) Reviews; the ES&H Technical Assurance Program; and independent audits of technical programs as needed. The Office also provides technical support to the EHSD Director for developing ES&H performance objectives and criteria for division self-assessments, ES&H technical assurance, and DOE Contract 31, Appendix B self-assessments (see RPM Section 8.01).

5.7.1 Issues Management Program

OCA is responsible for the Lawrence Berkeley National Laboratory (LBNL) Issues Management Program (IMP). The IMP encompasses the continuous monitoring of work programs,

performance, and safety to promptly identify issues to determine their risk, significance, and causes, and to identify and effectively implement corrective actions to ensure successful resolution and to prevent the same or similar problems from occurring.

This comprehensive institutional program is comprised of four Program Manuals, two databases, and two implementing procedures. These tools define and implement the process for issues identification, tracking, resolution, closure, validation, and effectiveness of corrective actions. Issues that are governed by this program include program and performance deficiencies or nonconformances that may be identified through employee discovery, internal or external oversight assessment findings, suggested process improvements, and associated actions that require formal corrective action. Issues may also be identified in and/or may result in Root Cause Analysis (RCA) reports, Price Anderson Amendment Act (PAAA) reports, Occurrence Reporting and Processing System (ORPS) reports, Accident Investigation reports, assessment reports, and External Oversight reports.

Analysis of issues, individually and collectively, is performed in order to identify programmatic or system issues, and to identify recurrence of issues, generic issues, trends and vulnerabilities at a lower level before significant problems result.

Lessons Learned and Best Practices, based on LBNL's and other facilities' operating experiences, are developed to ensure ongoing improvement of safety and reliability, to prevent the recurrence of significant adverse events/trends, and to determine implementation strategies that will help LBNL successfully meet the missions and goals set forth by the Department of Energy (DOE).

Many of the issues and concerns of the IMP are safety related. Therefore, OCA interfaces with EHSD in managing, coordinating, and supporting ES&H assurance activities, in particular the Division Self Assessment Program; the Management of Environment, Safety, and Health (MESH) Reviews; the ES&H Technical Assurance Program; and independent audits of technical programs as needed. The Office also provides technical support to the EHSD Director for developing ES&H performance objectives and criteria for division self-assessments, ES&H technical assurance, and DOE Contract 31, Appendix B self-assessments (see RPM Section 8.01).

5.8 Interface with UC Berkeley ES&H Department

For work carried out in LBNL and University of California at Berkeley (UCB) spaces, a "Partnership Agreement" has been renewed that clarifies responsibilities and oversight of safety requirements. Although the UCB campus and Berkeley Lab safety systems and procedures differ, they are consistent with the principles of integrated safety management and provide equivalent protection (See Reference 9).

The UCB safety system governs LBNL-funded activities in campus spaces exclusive of the Donner and Calvin laboratory facilities. LBNL principal investigators (PIs) have an obligation to Berkeley Lab line management to provide a safe workplace on campus for all LBNL-sponsored

work by complying with the UCB safety system. The LBNL safety system governs work in LBNL spaces, which include Donner and Calvin laboratories.

6.0 ES&H Management System Mechanisms

6.1 Introduction

This section identifies the set of core ISMS requirements applicable to all LBNL organizations, provides the foundation for ES&H management at LBNL, and includes the necessary detail required for implementation of ISMS directly and through other LBNL documents, including division-specific ISM Implementation Plans (see Appendix A). This ISM Management Plan, PUB-3000, and the Division ISM Implementation Plans are the principal mechanisms for implementing ISMS at LBNL. These three facets, complemented by assessment and assurance, provide a work structure that serves to ensure work is performed safely and in compliance with applicable ES&H requirements consistent with the graded approach. The primary focus of the LBNL ISMS is to provide the worker with a safe work environment, ensure that necessary resources are made available to perform their work, and establish requirements for adequate procedures and controls to ensure that work is performed safely while minimizing environmental impacts. The ES&H roles, responsibilities, and authorities described in this section are developed and practiced to drive the integration of safety into all work activities. The objective of this effort is for the ES&H Management System to be completely integrated within the Laboratory's work and business processes.

Planning the work activity is the starting point for analyzing and understanding hazards, identifying environmental aspects, and determining specific ES&H requirements and controls. Figure 6.1 illustrates that work conducted safely while minimizing environmental impacts is accomplished by following the seven ISMS Guiding Principles while applying the five Core Functions discussed in Section 4 in the Institution/Facility/Activity Process. It also shows the three levels of management requirements nested around accomplishment of the work activity. During the planning process, priorities are balanced with resources and constraints to maximize the likelihood of a successful outcome for the work activity envisioned. The results of the work process are analyzed for potential improvements throughout work planning and completion phases, and after the work is finished in an ongoing process,

A work activity must satisfy requirements and constraints based on its defined work scope, hazard, and environmental aspect analysis, and the applicable controls established by the institution and the facility where the activity is conducted. The institutional requirements presented in this Management Plan and PUB-3000 are used to ensure Laboratory-wide consistency. Similarly, a Division or facility may establish a required practice, constraint, or limit to ensure consistency and compatibility of operations within a facility. Information gained from evaluations of the work—operational results, worker suggestions, self-assessments, audits, and so forth—is used as feedback to adjust and improve requirements and controls at the work activity, facility, and institutional levels.

This section describes how the seven ISMS Guiding Principles and five Core Functions at the Institution, Division/Facility, Line Management/Activity (e.g., work lead) and individual levels are

aligned and nested within each other and become broader or more specific as one looks up or down the management chain. It also describes how the seven Principles and five Functions are interwoven during the planning, execution, and evaluation of work activities from the institutional down through the individual level.

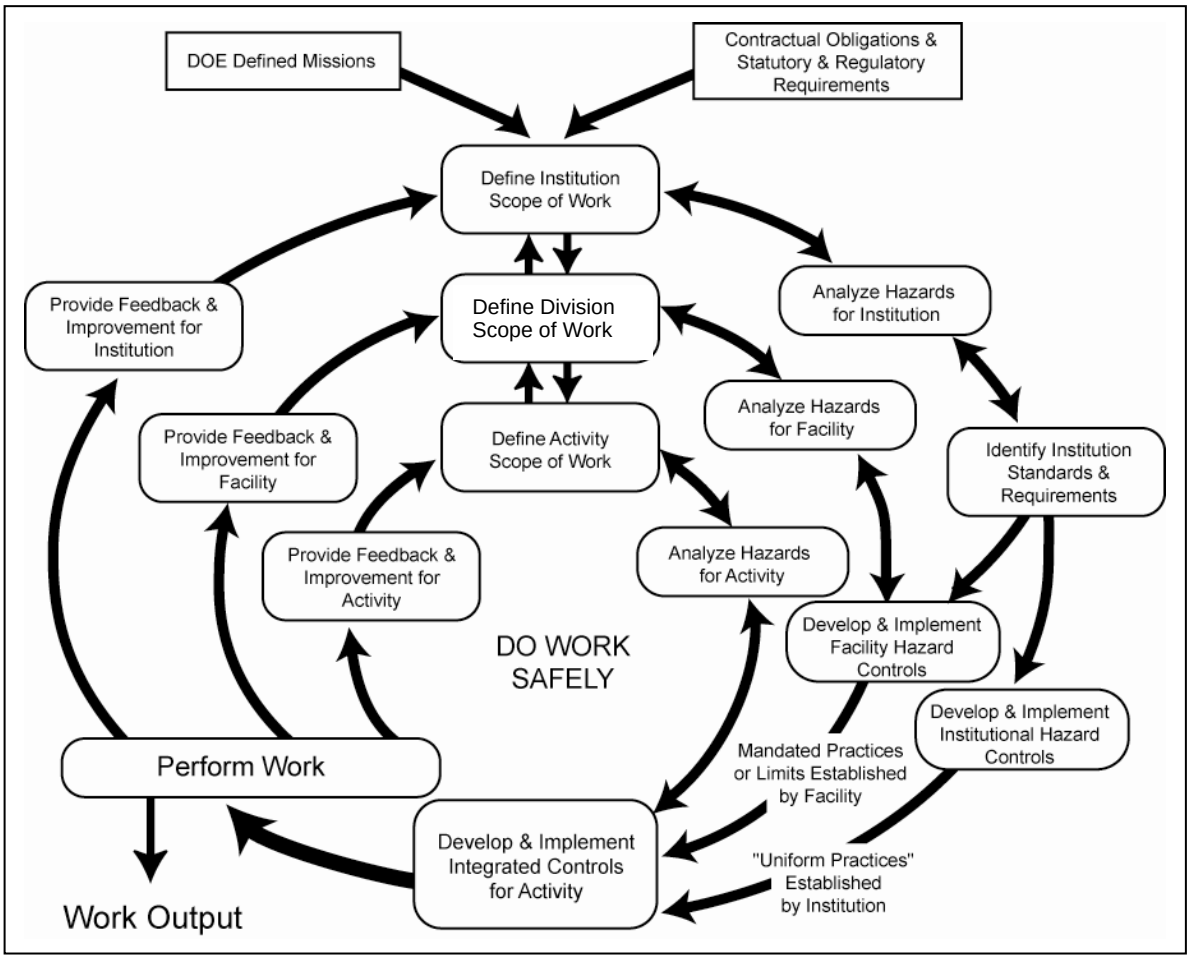

Figure 6.1 Institution/Facility/Activity ISM Work Cycle Structure for LBNL.[3]

6.2 Roles and Responsibilities

6.2.1 ISMS Guiding Principle 1—Line Management Responsibility for Safety

Line management is responsible for the ES&H system and is ultimately responsible for ES&H at the Laboratory. To meet the goal of integrating safety into all work and workplaces, line management must provide an unbroken linkage of management personnel for direction,

operations, performance, and effectiveness. Line managers are individual managers in that linkage with specific leadership responsibilities for work and job tasks including safety. To achieve such a linkage at LBNL poses unique and special challenges to meeting the principles of ISM. For example:

> Postdoctoral scholars (postdocs) may oversee, direct, and assign tasks to co-workers and yet are not permanent employees or recognized by law as supervisors.
>
> Groups visiting LBNL to use research facilities must include safety considerations in the conduct of their work on-site and, in order to meet the principles of ISM, must ensure that the management linkage is intact and includes the lead of the group and each worker.

LBNL has developed the "safety line manager" and "work lead" concepts to address this challenge to rigorous implementation of ISM (see Glossary, PUB 3000, Chapter 1). Staff members who are not line managers or supervisors as defined in the RPM, Section 2.19, but who have been authorized by their supervisor to direct, train, and assign tasks to others are accountable for the safety of those under their direction as a work lead. This group includes, for example, senior postdoctoral staff and visiting project leaders. Because these individuals derive their work and thereby their safety responsibilities from designated supervisors, the supervisor in these cases is ultimately responsible for adherence to EHSD policies and safe work practices. Safety line manager is a generic term for individuals directly responsible for an operation, activity, or group of activities. The Safety line manager may be at any level within the organization and is formally identified by the activity's authorizing individual. In most cases the Safety line manager will be directing the work of others as part of the operation or activity.

6.2.1.1 Line Managers Are Responsible for Participating in the ES&H System as Guided by Their Expectations, Roles, and Responsibilities

1) ES&H expectations, roles, and responsibilities are to be established for each employee, including supervisors and managers. Using the PRD process, expectations are to be documented and communicated, and the employee given the opportunity to provide feedback.

2) A substantive ES&H performance assessment addressing expectations and accomplishments is to be included in each individual's performance appraisal. For managers and supervisors, the appraisal is also to address performance in establishing and implementing ES&H processes. Refer to Appendix B.

3) ES&H responsibilities and ES&H performance are to be explicit considerations during the annual performance evaluation process and important factors in determining salary actions and promotions.

4) Each division, as part of their ISM Implementation Plan, must describe in detail how the issue of safety supervision is to be addressed. The need for diverse solutions across the

Laboratory due to differences including type of staffing, number and type of guests, and the existing systems for integration of safety into the management structure is recognized. One aim of developing the division ISM Implementation Plans is to present policies and processes that effectively address this challenge. Determining the effectiveness of each division in meeting this aim is part of the self-assessment process.

6.2.1.2 Workers Are Responsible for Participating in the Development of the ES&H System and for working accordaing to established Laboratory processes/procedures as Guided by the Expectations, Roles, and Responsibilities Assigned to Them by Line Management

Each worker, supervisor, and manager is directly responsible for ensuring his or her own safety and looking after their co-workers while providing responsible stewardship of the environmental resources in their care, and promoting a safe, healthful, and environmentally sound workplace and community. It must be recognized that not all individuals functioning as work leads at LBNL are formally recognized as supervisors or managers as defined in the RPM. Nonetheless, LBNL policy makes clear that work leads have distinct responsibilities for management of safety in their work areas.

1) The Laboratory's goal is to practice ES&H by taking actions to avoid the potential for injury to people or damage to property, and to provide responsible stewardship of the environmental resources in its care. The principal means of instilling responsibility and enforcing accountability for ES&H are:

   a) communicating ES&H expectations to employees;

   b) reinforcing expectations through timely verbal feedback;

   c) involving workers in policy and procedure development, work planning, hazard control, and continuous self improvement (such as division assessment activities);

   d) formal appraisal and salary actions implemented annually for each employee;

   e) awards and recognition for notable contributions to ES&H; and

   f) corrective action in cases where ES&H system performance or individual performance does not met expectation .

2) Feedback and corrective action for individual performance not meeting expectation will be taken consistent with Laboratory personnel policies and procedures for violations of Laboratory ES&H requirements.

3) Feedback and corrective action when the EHS system does not meet expectation, such as the occurrence of an incident or a systemic failure requires the organization authorizing the work to perform an investigation of the relevant circumstances or assisting DOE investigators in conducting a review that falls within their purview. The investigation will

involve the appropriate subject matter experts, certified root cause analysts, and workers. Necessary changes are to be made to the relevant policies, procedures, or hardware based on the findings of the authorizing organization's review.

4) Accountability applies to all levels of employees including managers and supervisors. It calls for positive reinforcement for meeting Laboratory ES&H expectations and negative consequences for failing to do so. The management of each division is responsible for having in place effective processes to implement, measure, and reinforce Laboratory ES&H expectations. Each division is to use its division awards and recognition program to promote exemplary ES&H behavior and performance.

5) Each division will hold its employees accountable for compliance with Laboratory ES&H requirements through personnel processes such as performance appraisals, salary-management actions, awards and recognition, and the application of corrective action. In addition:

   a) Each worker, immediate supervisor, and manager is directly responsible for ensuring that accidents and injuries are properly reported. Accurate and complete reporting is necessary.

   b) All employees are responsible for bringing ES&H concerns promptly to the attention of the appropriate manager or supervisor for resolution. If a satisfactory response is not received, then the senior manager for the organization should be contacted, followed by the Division Director for Environment, Health & Safety (EHSD).

6) Each employee is directly responsible for ensuring his or her own safety, the safety of others, and minimizing the environmental impacts of their actions. Individuals are responsible for following all ES&H work instructions, including signs, procedures, JHAs, and workers' aids. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the employee is responsible for notifying the appropriate individuals and assisting, as appropriate, in modifying the work instructions. All members of the workforce are held accountable for meeting the Laboratory's ES&H requirements as defined in this Management Plan, the WSS set in Contract 31, and as specified in PUB-3000 and other work instructions.

6.2.2 ISMS Guiding Principle 2—Clear Roles and Responsibilities

Clear roles and responsibilities are established and maintained.

6.2.2.1 ES&H Roles, Responsibilities, and Authorities (RRAs) for Organizations and Individuals Are Clearly Defined

1) The authorizing organization is responsible for authorizing work. Authorizing organizations are distinguished by having control of the funding as well as responsibility to the sponsor for accomplishing the programmatic mission or activity.

2) The responsibility for work authorization may be delegated to another organization along with the funds to accomplish a specific work element. All delegations of work-authorization responsibility must be formally documented and approved by the management of each division involved. Irrespective of the number or level of work authorization delegations, the program organization retains ultimate responsibility back to the sponsor for the conduct of the work.

3) Work performed as services by one organization for another is an area of particular concern requiring special attention. The appropriate division of ES&H roles, responsibilities, and authorities (RRAs) between requesting and service-providing organizations must be clearly defined.

4) The authorizing organization is responsible for the activity's conduct, including accomplishing the technical objectives and ES&H requirements within the defined budget. The individuals responsible for: (a) authorizing the work activity; (b) validating that the proposed work falls within the established ES&H envelopes (i.e., facility or operational concurrence); and (c) supervising the specific work (i.e., ensuring work requirements are met) must be clearly identified and their ES&H RRAs clearly defined.

5) The individual supervising work is responsible for identifying the job assignments that have specific ES&H RRAs and assuring that they are clearly defined. This may be documented in ES&H documents (e.g., PUB-3000*,* AHDs, RWAs, JHAs) or in division-specific documents. This information is to be provided to the individual performing the work and to be readily accessible to others who should be aware of the ES&H RRAs.

6) Each Division Director is responsible for identifying a Building Manager for each facility to fulfill responsibilities identified in PUB-3000 and PUB-541.

7) Each division is to have a Division Safety Coordinator to provide independent oversight of the division's organizations, facilities, and activities to assure the proper implementation of the ES&H program. In this context, "independent" means that the Division Safety Coordinator is not in the direct line of authorization or management of the activities being evaluated. When this condition is not met, there shall be a separate independent evaluation of the activity to eliminate any potential conflict of interest.

8) LBNL's ES&H Division is responsible for supporting the management chain by participating in work activity planning, monitoring operations for compliance, and providing the information needed to the appropriate staff and management to help maintain a safe work environment, while minimizing environmental impacts.

6.2.2.2 The Management Chain Is Defined for Each Work Activity So Roles and Responsibilities Are Clear

1) For each work activity, the individuals serving in the management chain (i.e., first-level work lead up to the responsible Division Director) are to be identified by the organization authorizing the work. The management chain has direct control over the funding for the work activity. Each Division ISM Plan must describe the management chains and

relationships used to manage their division. The work lead and first-line supervisors are key individuals in the structure; they must know their people, the work, and the structure both up and down as well as across the structure. Safety documentation must, at a minimum, specify the work lead, Safety Line Manager, and Division Director. Additional names should be added if they are key to the allocation of ES&H resources or ES&H reporting.

2) The management chain is responsible for: (a) defining the scope of work; (b) ensuring that the hazards and an environmental aspects control system is effectively implemented; (c) ensuring that workers have the skills, knowledge, and abilities (SKAs) to initially evaluate the hazards and identify the environmental aspects associated with an activity; (d) ensuring that workers have the SKAs, including physical capabilities, to perform the assigned work safely while minimizing environmental impacts; (e) authorizing the defined work, subject to the appropriate controls; (f) ensuring that the workers perform the work safely while minimizing environmental impacts and in conformance with applicable institutional, facility, and activity controls; (g) monitoring and, as appropriate, strengthening the work activity's ES&H performance; and (h) soliciting worker input.

6.2.2.3 LBNL's Commitment to Safety and Stewardship of the Environment through ISM Is Extended to Subcontractors and Subcontract Employees for Whom LBNL Has ES&H Responsibility by Describing Clear Roles and Responsibilities

1) To ensure that the Laboratory's commitment to safety and stewardship of the environment, ISM is extended to all of its service subcontractors, lower-tier service subcontractors, and their employees, including construction subcontractors. Additionally, ES&H requirements are to be incorporated into the subcontracts, as appropriate, and flowed down to the lower-tier subcontractors as appropriate. The subcontractors are responsible for the flow down of ES&H requirements to their lower-tier subcontractors and the ES&H interactions with them.

2) Those activities identified on the Designated Commercial Services List are determined to be noncomplex and nonhazardous when performed in a work location having only negligible hazards present. Noncomplex and nonhazardous tasks are excluded from the ISM contractual flow-down requirements. The Designated Commercial Services List can be found at the following Web address:

http://procurement.lbl.gov/SubcontractorSafetyGuide.pdf

3) An ES&H specialist (usually from EHSD) determines the selection of appropriate subcontractor ES&H requirements to ensure subcontractor ES&H procedures appropriately meet Laboratory standards. All appropriate hazards and environmental aspects are to be communicated between the Laboratory and the service subcontractor. Hazards and environmental aspects to be communicated include the Laboratory's work activity and facility work area hazards, and the subcontractor's work-activity hazards and environmental aspects. Divisions may also establish procedures specific to their requirements.

4) The subcontract ES&H requirements are to be consistent with the flow-down requirements of Contract 31, Clause I.86, and this Management Plan. The Procurement and Property

Department (Procurement) is to use Contract 31, Management Plan requirements, and the subcontractor ES&H requirement determination to select the appropriate subcontractor-ES&H requirements according to Procurement procedures.

5) The organization requesting a subcontract for work is to evaluate the planned subcontract work using the LBNL e-Procurement Requisition Worksheet (PRP) process as described in the *Guide for On-Site Subcontractor Safety Plans*. The appropriate ES&H SME can assist the requesting organization. The appropriate ES&H SME is to be notified of all requests for a subcontract where the work is categorized as complex or hazardous. Subcontractor interaction on the development of their hazards, environmental aspects, and controls may be necessary and can be facilitated through use of a Safety Plan or Safety Checklist.

6) The subcontractor is to be informed of the applicable Laboratory location hazards and environmental aspects for the work activity. The subcontractor must also obtain the appropriate training as determined by the ES&H SME.

7) A subcontractor performing work categorized as complex or hazardous is required to manage and perform the work according to the subcontractor's ES&H management system, which, at a minimum, must fulfill the requirements of Contract 31, Clause I.86, and be available for Laboratory review through Procurement. In addition, at the determination of the ES&H SME, a subcontractor may be required to provide a site- and/or job-specific ES&H plan based on its ES&H management system. Procurement is to obtain this plan. The requesting organization and the appropriate ES&H SME are to review it for operational and technical accuracy and completeness. Then, together with Procurement, they provide the approval through Procurement process.

8) Employees of another DOE facility in which work is performed under an approved ISM program (e.g., ANL, BNL) should be treated as LBNL workers regarding ES&H matters when working at LBNL. Such employees are required to satisfy all Laboratory ES&H requirements specified in applicable Laboratory ES&H documentation (e.g., JHAs, JHQs, AHDs) when performing services for the Laboratory. However, LBNL may give equivalencies for training provided by their employer.

6.2.2.4 ES&H Documents Are Written with Worker and Stakeholder Participation So That They Are Readily Understandable by the Individuals Performing and Managing the Work, including Clear Roles and Responsibilities

1) The purpose of the Laboratory's ES&H documents (i.e., manuals, plans, and procedures) is to enable all employees, subcontractors, guests and visitors to work safely while minimizing environmental impacts.

2) The authors and approving organizations of ES&H documents are responsible for ensuring that instructions are workable and readily understandable to the individuals performing and managing the work. The authors are responsible for ensuring the participation of appropriate workers in the development of ES&H documents that affect them. The authors

and approving organizations are likewise responsible for ensuring that ES&H documents are consistent with applicable rules and requirements.

3) The resulting ES&H documents are to be readily available to all individuals who need access to the information. Work instructions should contain the information needed to perform the work safely. When describing hazards and specifying controls, instructions should minimize references to documents not readily available at the worksite.

4) In situations where requirements are particularly complex or ambiguous, the organization authorizing the work is to use the appropriate ES&H professionals and other Subject Matter Experts to interpret and assist in developing ways to satisfy requirements. Workers who will be performing the work should be consulted during development to verify that the resulting instructions make sense.

5) Workers are strongly encouraged to be actively involved in the development of operating procedures specific to their work activities.

6) Individuals are responsible for following ES&H documents, as written, or having the documents changed, as required, prior to performing work.

6.2.3 ISMS Guiding Principle 3—Competence Commensurate with Responsibilities

Personnel possess competence commensurate with responsibilities.

6.2.3.1 Individuals Receive Appropriate Institutional ISMS Training

1) All Laboratory employees are to be trained in the principles and functions of ISMS at a level appropriate for their specific job duties and responsibilities. The Laboratory is responsible for developing the institutional ISMS training courses such as ESH 10, “Introduction to Environment, Safety and Health at LBNL.”

2) Each division is responsible for ensuring that their employees receive ISMS training, including facility- and activity-specific training as appropriate, in an effective and timely manner.

3) Each division is responsible for assuring that the required ISMS and ES&H training is appropriately documented in the JHQ System, and reviewed and updated at least annually.

6.2.3.2 Individuals Receive Appropriate Job-Specific ES&H Training

1) The individual’s home organization ensures base skills through the hiring process and performance review.

2) The individual supervising the work activity is responsible for ensuring that the training necessary to do the assigned work in accordance with the ES&H requirements is identified and communicated to the individual’s home organization.

3) All personnel are to receive training to perform their work in a safe and environmentally-responsible manner.

4) Training, with appropriate testing or evaluation, demonstrates competency to meet ES&H standards and facility- and activity-specific requirements.

5) Accomplishment of formal ES&H training is documented in the Berkeley Lab JHQ Training Record System (JHQ System). Documentation of informal training, such as job specific training on procedures, on-the-job training, maintenance of PPE, and so forth is the responsibility of the Safety Line Manger and home organization supervisor and should follow the guidance given in PUB-3000 Section 24.4.8.

6) The authorizing organization is responsible for ensuring that the resources necessary for required ES&H training are provided by that organization or another appropriate organization.

7) Home organizations are to verify that their personnel have the required training.

8) The work activity safety line manager is to ensure that the personnel supporting their activities have the required ES&H training, including facility-specific training.

6.2.3.3 Individuals Are Qualified to Perform Assigned Work

1) Each individual must possess the necessary skills, knowledge, and abilities, including physical capabilities, to carry out their assigned tasks. The base skills are to be ensured by the home organization.

2) The individual supervising the work activity is responsible for identifying: (a) the qualifications, including appropriate medical certifications and surveillance necessary to carry out the work; and (b) the individuals with the qualifications and training to perform the work.

3) Each individual is responsible for competing all required training identified in their JHA/JHQ and maintaining necessary certifications with the cooperation and support of their management chain.

6.3 Work Planning and Prioritization

6.3.1 ISMS Core Function 1—Define the Scope of Work

6.3.1.1 The Work Activity Is Defined

1) The organization authorizing a given work activity is responsible for: (a) stating the technical objectives; (b) defining the work elements to be performed; (c) identifying the facility in which the work will take place; and (d) identifying the individual who will be supervising the work activity.

2) The management chain that results from these determinations is responsible for ensuring the work activity is properly analyzed, controlled, performed, and monitored.

6.3.1.2 The Graded Approach Process Is Consistently Applied

1) An individual may initiate and perform a work activity without the imposition of formal work controls, if it involves only activities commonly performed by the public as explained in PUB-3000. In no instance shall an individual initiate or perform a work activity not commonly performed by the public without authorization of an appropriate person in the management chain. Individuals are expected to work within their job scopes and work assignments. Using the graded approach, senior researchers would be expected to have a wide range of authorization within their job scope as compared to graduate students or technicians new to a lab and in the process of developing their skills to meet their new job scope.

2) The authorizing organization is responsible for ensuring that the greater the hazards associated with an activity, the more rigorous the work planning process required. More rigorous processes will also be required if significant environmental aspects are present. The objective of the work planning process is to ensure the hazards and environmental aspects associated with the work activity are clearly understood and appropriately addressed. To ensure this objective is met, relevant ES&H professionals and Subject Matter Experts are to be used during the work planning process, as appropriate. These individuals provide advice on the application of PUB-3000. The detail of work instructions is tailored to the consequence of the activity and the competency of the workers.

3) Consistent with the provisions and levels described in Section 7 and PUB-3000, the safety line manager is responsible for: (a) authorizing the work activity; (b) ensuring the facility and/or operational ES&H envelope; (c) supervising the work; (d) providing ES&H support; and (e) assuring worker involvement in the analysis of hazards and environmental aspects, and in determining appropriate work controls and environmental aspect management to be applied to the work activity.

4) Work is to be authorized by the appropriate level of management as described in Section 7 of this Plan and detailed in PUB-3000, Chapters 6 and 32.

6.3.2 ISMS Guiding Principle 4—Balanced Priorities

Resource allocations are balanced, making ES&H a priority in project planning and execution.

6.3.2.1 Resource Planning Processes Ensure Balanced Priorities

1) The authorizing organization is responsible for allocating sufficient resources to ensure safe and compliant operations while minimizing environmental impacts.

2) A work activity proceeds only with a reasonable expectation by the management chain that there will be sufficient resources to ensure ES&H requirements are satisfied over the length of the project, including closeout activities.

6.4 Hazard Analysis

6.4.1 ISMS Core Function 2—Analyze the Hazards and Environmental Aspects

6.4.1.1 Hazards and Environmental Aspects Are Identified and Analyzed for All Work Activities

1) The authorizing organization is responsible for ensuring that the associated hazards and environmental aspects are identified. ES&H professionals are to be used in the hazard- and environmental-aspect-identification process, as appropriate. Workers are to be provided an opportunity to participate in the process of identifying hazards and environmental aspects.

2) Hazards and environmental aspects are to be identified and analyzed consistent with the provisions of PUB-3000*,* chapters 6 and 32. ES&H professionals and Subject Matter Experts provide advice on the application of PUB-3000 and applicable WSS so as to ensure consistent implementation across LBNL.

3) Each individual is responsible for making conscious considerations of the ES&H implications of their actions whether or not formal hazards analysis, identification of environmental aspects, and their impacts and documentation are required.

6.4.1.2 Job Hazard Analysis Documents Are Developed for Appropriate Work Activities

1) The intent of the JHA is to ensure front-end identification of all hazards and environmental aspects associated with a work activity. A JHA is required when a work activity is beyond that commonly performed by the public. The organization authorizing a work activity is responsible for ensuring that a JHA is prepared, reviewed, and approved consistent with the provisions of Section 7 of this Plan, and PUB-3000 (chapters 6 and 32). The format and instructions for the JHA are contained in PUB-3000, Chapter 32, and build upon the Work Authorization requirements found in Chapter 6. The completed JHA, with appropriate RWAs, AHDs, etc., provides the authorization for the work activity once a work review confirms readiness. The scope of a work review is tailored to the scope of the work using the graded approach and may be a simple conversation between the worker and supervisor, or it may involve a rigorous checklist prior to startup of a complicated experimental device.

6.4.1.3 Appropriate Sections of PUB-3000 Are Applied in the Process of Analyzing Hazards and Identifying Environmental Aspects

1) The specific hazards and environmental aspects identified with the work activity are to be analyzed according to the requirements of PUB-3000, Chapter 6, and by the use, as necessary, of the appropriate ES&H professionals.

2) The identified hazards and environmental aspects are to be clearly communicated to all involved in the activity.

3) The authorizing organization and the individual supervising the work are responsible for periodically reviewing the hazards and environmental aspects associated with the work activity as described in PUB-3000 ,Chapter 6.

6.5 Control and Mitigation Hazards and Environmental Aspects

6.5.1 ISMS Core Function 3—Develop and Implement Hazard and Environmental Aspect Controls

6.5.1.1 Uniform Processes Govern Development of ES&H Documents

1) Uniform requirements and processes are to be applied across the Laboratory for consistent and comprehensive completion of the ES&H documents cited in this Management Plan, as well as other major ES&H documents by using the provisions contained in Section 7 and PUB-3000. The described requirements and processes provide the essential conditions, content, format, and other specifics for these documents. Appropriate implementation and utilization of applicable WSS are to be incorporated as described in PUB-3000.

2) A uniform process is to be applied across the Laboratory for the development of ES&H and ES&H-related procedures consistent with the provisions established in PUB-3000. This process identifies when procedures are to be developed, specifies content based upon the hazards and environmental aspects being managed, and provides a recommended format for structuring the procedure.

6.5.1.2 Requirements in PUB-3000 Are Applied in the Process of Developing and Implementing Controls

1) The individual supervising the work activity is responsible for ensuring that tailored controls are developed for each hazard associated with the work activity and the reduction of the impacts of identified environmental aspects. The tailored controls or reduction of impacts including the appropriate incorporation of engineered and administrative controls are to be developed and implemented consistent with Section 7 and PUB-3000.

2) As appropriate, Subject Matter Experts are to be used in development of work and environmental-aspect controls. These individuals provide advice on application of PUB-3000 and applicable WSS to specific work activities, to ensure consistent implementation across LBNL and the reduction of significant aspects.

3) Workers are strongly encouraged to be actively involved in the development of operating procedures specific to their work activities.

4) The authorizing organization is responsible for approving the work and environmental-aspect controls and ensuring that appropriate and graded use of quality-assurance principles and processes as described in the *Operating and Quality Management Plan* (PUB-3111) are incorporated and used.

5) The designated controls are to be clearly communicated to all associated with the activity, and whose work proximity makes it prudent that they are aware of the controls.

6) The authorizing organization and the individual supervising the work are responsible for periodically reviewing and ensuring the adequacy of the controls associated with the work activity and the effectiveness of the engineered and administrative controls incorporated.

6.5.2 ISMS Guiding Principle 5—Identification of ES&H Standards and Requirements

ES&H standards and requirements are identified and implemented. The Work Smart Standards provide the first tier of necessary and sufficient standards to be implemented. The basis and particulars are presented in Sections 10 and 12.

6.5.2.1 Programs for Preventing Injuries Are Defined

1) Each division is responsible for having in place defined programs to prevent injuries. An ergonomics program developed consistent with PUB-3000 is an example of a defined program to prevent injuries.

2) Each division is responsible for analyzing all the injuries associated with their organization's operations and facilities.

3) Injury and illness statistics and related information are accessible through an access-controlled database (SAAR Database) maintained by EHSD.

4) Using resources such as the Lessons Learned program, each division is responsible for assessing whether existing practices or conditions could materially contribute to the organization's accident and injury rates.

5) Each division is responsible for developing programs to address (a) the specific injury and illness categories driving the organization's Days Away and Restricted Time (DART) numbers, and (b) other practices or conditions that could materially affect the organization's accident and injury rates.

6.5.2.2 ISMS Principles and Commitments Are Addressed in ES&H Documents

1) PUB-3000 and other Laboratory ES&H documents are to address ISMS principles and commitments.

2) PUB-3000 describes the approaches the Laboratory uses to implement ISMS. It references and implements the WSS set as they relate to specific work, hazards, and environmental aspects.

3) The division ES&H-related documents (e.g., AHDs, Division ISMS Plans, self-assessment plans, training plans) are based on ISMS principles and incorporate the applicable requirements of the WSS set, all per the provisions of this Management Plan and PUB-3000.

6.5.3 ISMS Guiding Principle 6—Hazard & Environmental Aspect Controls Tailored to Work Being Performed

Hazard controls are tailored to the project work. Consideration of controls as they apply to the workplace hazards and environmental aspects shall take into consideration regulatory requirements and the significance of the hazard.

6.5.3.1 Appropriate Sections of PUB-3000 Are Applied in Tailoring Controls to Specific Work Activities

The individual supervising the work activity is responsible for ensuring tailored controls are developed and implemented for each hazard and environmental aspect associated with the facility and work activity consistent with the provisions of Section 7 and PUB-3000.

6.6 Work Authorization and Performance

6.6.1 ISMS Guiding Principle 7—Operations Authorization

Operations are authorized before work begins. Depending upon the scope, work may be line management authorized or, in conformance with the graded approach, may require extensive review by ES&H professional staff, engineering experts and explicit authorization by the Division Director. Some activities may require authorization by outside agencies. Further information regarding work authorization is provided in Section 7.0.

6.6.1.1 Work Activities Are Appropriately Reviewed and Authorized Before Starting

1) Work activities are to be reviewed and authorized before the work begins, consistent with the provisions of Section 7 and PUB-3000 (Chapter 6).

2) The safety line manager solicits worker review and comment of proposed operating plans or procedures before work is authorized.

3) The authorizing organization is responsible for ensuring an appropriate work authorization review is conducted to validate satisfaction of the ES&H requirements.

4) The scope and rigor of the work authorization review will vary based on the characteristics of the work activity. The requirements of the work authorization review process are defined in PUB-3000, Chapter 6.

5) When a person calls 7911 or 6999 for an emergency situation, the Security & Emergency Operations Group automatically become the authorizing organization for the emergency response, without any documentation (other than their Policies and Procedures), to respond to that incident. The Security & Emergency Operations Group is responsible for ES&H and the work practices of the response. The management of the response is handled via a unified command involving appropriate staff from this organization.

6.6.2 ISMS Core Function 4—Perform Work within Controls

6.6.2.1 Work Is Appropriately Controlled

1) Each individual is responsible for adhering to the ES&H controls established for the work activity and informing their supervisors when controls are believed to be inadequate.

2) The Safety line manager is responsible for ensuring that workers understand the ES&H controls and understand that work is to be performed according to the defined work controls.

6.6.2.2 Applicable Procedures and Governing Documents Are Followed

1) The individual supervising the work is responsible for ensuring that each worker has immediate access to the work activity's governing procedures and ES&H documents.

2) Steps are taken by the individual supervising the work to ensure that each worker on the activity is knowledgeable concerning the governing procedures and work and environmental aspect controls.

3) All work is to be performed in conformance with work instructions, including signs, AHDs, JHAs, workers' aids, and other governing documents. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the employee is responsible for notifying the appropriate individuals and assisting, as appropriate, in modifying the work instructions.

6.7 Performance Monitoring and Feedback

6.7.1 ISMS Core Function 5—Provide Feedback and Continuous Improvement

6.7.1.1 Work Activities Are Monitored

1) The individual supervising the work is responsible for monitoring the work activity to ensure that the governing procedures and ES&H documents are being followed. . Safety Line Managers observe their workers at appropriate intervals to verify that work is to be performed according to the defined ES&H work controls.

2) If there is indication that the proper limits and/or controls of a work activity are not being followed, the activity is to be evaluated immediately by the authorizing organization to confirm the indication. Once confirmed, the work activity shall be suspended in a controlled and safe manner, if appropriate, until remedial actions are taken.

3) In the event it is determined that the approved limits and/or controls of a work activity is exceeded, the affected work and/or facility is to be placed in a safe condition, and further work is to be suspended until appropriate remedial actions are taken. Work Activity Authorization and Facility Operation Authorization provisions are discussed further in Section 7 and PUB-3000 (Chapter 6).

4) Each worker is responsible for bringing to the attention of their immediate supervisor problems with the applicable limits or controls and opportunities for improvement associated with the work or governing procedures. The supervisor is responsible for the evaluation and appropriate action.

5) Each worker is empowered to stop work if there is an unsafe or unapproved condition. Prompt notification of the immediate supervisor is required. Resumption of work will not proceed until after the condition has been evaluated and the appropriate remedial actions have been taken.

6.7.1.2 ES&H Self-Assessment Programs Are Defined

1) The purpose of the Laboratory's ES&H self-assessment program is to ensure a proactive approach to ES&H and to improve ES&H performance. The specific objectives of LBNL's ES&H self-assessment program are to ensure that (a) Laboratory operations comply with applicable ES&H policies and procedures; (b) ES&H-related requirements are integrated into all levels of facility, management, and operational activities; and (c) ES&H-related deficiencies are identified, analyzed, and managed to minimize their occurrence or recurrence.

2) The Laboratory's self-assessment program has three legs. Management Environment, Safety and Health (MESH) reviews of each division are conducted by the institutional Safety Review Committee on a nominal three year cycle. ES&H Technical Assurance Assessments are conducted by ES&H Division SMEs to evaluate the performance of individual ES&H programs (e.g. Chemical Hygiene) across divisions. Division self-assessments are conducted by division staff to evaluate implementation of all ES&H programs needed to control hazards within a given division.

3) Each division is to develop and operate an ES&H self-assessment program consistent with the requirements specified in the PUB-3000 and the *Division Self-Assessment Manual* (PUB-3105). As an integral part of the ES&H self-assessment process, each division is to perform an annual evaluation of its implementation of the LBNL ISMS. The evaluation is to include a review of division-specific ISM Implementation Plan to ensure it remains workable and current, and in conformance with this Management Plan. Appropriate workers and other key staff should be involved in the self assessment.

4) The Office of Contract Assurance conducts independent oversight of the three legs of the Laboratory's Self Assessment activities as described in *ES&H Self-Assessment Program* (PUB-5344).

6.7.1.3 Processes Are in Place to Measure and Reinforce ES&H Requirements and Expectations

1) Contract 31 establishes strategic performance objectives and measures as described in Section 9.2. Each performance objective and measure is assigned to a specific division that is responsible for providing the required information and tracking the status of performance. The Office of Contract Assurance administers this process.

2) The ES&H performance measures process is managed at an institutional level. The Safety Review Committee (SRC) has a key advisory role in facilitating the ES&H performance measures process and integrating it into the divisions' ES&H performance metrics.

3) ES&H performance measure information is accessible to all employees.

4) Each division is responsible for having appropriate metrics to evaluate its ES&H performance.

6.7.1.4 Processes Are Defined for Analyzing Problems, Identifying Root Causes, and Ensuring Corrective Actions Are Taken

1) Each division is responsible for analyzing, tracking, trending, and correcting ES&H-related problems and deficiencies associated with its operations and facilities by using CATS.

2) Each division is to record and track ES&H-related deficiencies in CATS consistent with the provisions and thresholds specified in PUB-3000. Each division is responsible for correcting deficiencies from requirements, as described in PUB-3000.

3) Each division is responsible for reporting, analyzing, tracking, and correcting ES&H-related occurrences consistent with the Laboratory's implementing procedure for occurrence reporting.

4) Serious ES&H-related incidents are to be formally reviewed, addressed, and reported as consistent with the provisions of PUB-3000. For incidents radiological facilities and activities, the Radiation Protection Group and OCA are to be involved, as appropriate.

5) Each division is to use medical surveillance examinations as appropriate to assess impacts of work on employee health.

6) Root cause analyses are to be performed for occurrences, formal incident analyses, and other ES&H-related issues the division deems appropriate.

7) Senior management will include the use of the Corrective Action Tracking System (CATS) to identify, track, and resolve institutional cross-cutting issues that require senior management attention.

6.7.1.5 An Annual Assessment of LBNL's ISMS Is Conducted

The Office of Contract Assurance (OCA) prepares an annual report on the implementation of the LBNL ISMS. This report summarizes results and details significant findings identified through the division's ES&H Self-Assessment activities.

1) The OCA is to periodically assess continued implementation of ISMS, both institutionally and at the Division level. This is accomplished, in part, by review and roll-up of the division annual evaluations ISMS implementation specified in Section 6.7.1.2.

2) Assessments of division implementation of ISMS will include division-specific documentation and actions as required by this document (e.g., Section 6.7.1.4) and PUB-3000.

3) The OCA will transmit the results of these assessments to the affected Division Directors and the Deputy Chief Operating Officer (COO) for their information and any action that may be required.

6.7.1.6 Lessons Learned Are Effectively Transmitted

1) The Laboratory's Lessons Learned Coordinator gathers information regarding potential Lessons Learned from internal and external sources based on experiences considered relevant to Laboratory operations. Potential Lessons Learned are reviewed with several ES&H organizations within the Laboratory, including members of the SRC, before being distributed.

2) Lessons Learned are to be shared to enhance operational ES&H and facilitate cost effectiveness. Individuals are to be encouraged to submit Lessons Learned.

3) Lessons Learned are to be prepared and distributed whenever there is an opportunity to share a valuable new work practice or warn others of an adverse practice, experience, or product.

4) The Lessons Learned Coordinator transmits Lessons Learned to individuals identified by each division's Safety Coordinator. In addition, each Safety Coordinator is responsible for ensuring transmission of Lessons Learned to other appropriate personnel.

5) Lessons Learned will be posted on the internal LBNL Web site.

6) The authorizing organization is responsible for ensuring that applicable Lessons Learned maintained on LBNL's internal Web site are considered during the process of authorizing work.

7) A review of Lessons Learned maintained on the internal Web site is to be incorporated into each division's self-assessment program to ensure continued utilization of relevant Lessons Learned.

8) As described in LBNL procedures, Lessons Learned are shared with the greater DOE community through DOE's Web site for Lessons Learned.

6.7.1.7 Improvements Are to Be Incorporated into the ISMS Implementing Documents

Based on the information derived from the various performance monitoring and feedback processes, appropriate improvements are to be incorporated into this Management Plan, PUB-3000, and division-specific documents, as appropriate. The process for revision of this Plan, and PUB-3000 is described in Section 8.4.

6.8 Conclusion

Unique issues and special cases not articulated in the set of core requirements in this Section are to be addressed by the identified management chain and taken to the responsible Division Director for resolution and then, as necessary, to the Deputy COO.

7.0 Work Planning and Authorization Process

7.1 Introduction

The objective of the work planning and authorization process is to promote safe, environmentally responsible operations by ensuring that the hazards and environmental aspects associated with facility operations and work activities are clearly understood and appropriately managed.

Consistent with the graded approach process, the greater the hazards or significance of the environmental impacts associated with a facility or work activity, the more rigorous the preparation and authorization process required. The Laboratory uses facility-based authorizations and has two Safe Work Authorization levels for work activities based on specific hazards, environmental aspects and thresholds. The two Safe Work Authorization Levels are: Work Commonly Performed by the Public and Line Management Authorized Work. Line Management Authorized Work has a further subset of Formal Authorized Work which is usually of higher potential hazard and requires explicit controls (e.g., an AHD or RWA).

Work Commonly Performed by the Public includes activities with hazards commonly accepted, the control of which requires little or no guidance or training to perform the work safely. When aligned with the concepts applied by the Procurement organization for subcontractors, the tasks associated with this work are determined to be noncomplex and nonhazardous when performed in a work location having only negligible hazards present (Section 6.2.2.4). It is recognized that skilled members of the public may conduct activities beyond the capabilities of the general populous, such as changing a faulty electrical outlet, or using a toxic and corrosive paint stripper. These types of activities are to be considered as requiring substantial guidance or training to perform, and as such, are not to be considered “Work Commonly Performed by the Public.”

For all other work tasks, including routine laboratory or shop work and work on equipment containing stored energy, Line Management Authorization must be granted. Authorization is a review and management approval process designed to ensure that procedures, controls, and resources are in place before the work begins. Review of the JHA is a primary example of this authorization.

Facility-based authorizations are independent of Safe Work Authorizations and provide a safety “operating envelope” based on all activities taking place within that facility. They are generally based upon operating permits from government agencies that must be obtained prior to operation of the facility. They define and document the content and particulars of activities allowed to take place within that facility. The Line Management and Formal Work Authorizations are based on the control of work-activity hazards and management of environmental aspects, and are used to define the hazards and environmental aspects, establish the controls, and

authorize a work activity. Line Management and Formal Work Authorizations must address all facility-based authorization constraints and conditions in their authorization process.

The basic functional relationship and the integration between these authorizations is that they ensure that a planned activity is done within the safety envelope authorized for a facility and that clear lines of responsibility are maintained. When used in combination, the structures provide a comprehensive and integrated approach to a formalized ES&H process, and enable consistent application across the Laboratory.

7.2 Facility-based Authorization Structure

Facility-based authorizations provide safety "operating envelopes" based on all activities taking place within that facility. There are several formats of facility-based authorizations, and they may be initiated at any time, from design and construction through initial startup, operation, renovation, and final demolition, in a facility's life cycle. The Facilities Division prepares National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) documentation, and EHSD prepares other facility-based authorizations (permits), but the operating divisions within the affected facility are responsible for conducting work within the defined safety "operating envelope" specified by the authorization, e.g., within the conditions of the permit. The Facilities Division and EHSD function as the line organizations responsible for environmental management, including emissions and waste management, and providing treatment and management services to the operating divisions. The types of Facility-based authorizations include: air emission permits, wastewater discharge permits, accelerator-based safety analysis documents (SAD s), solid/hazardous waste generation/treatment permits, etc. Facility-Based Authorizations are addressed in detail in PUB-3000 Section 6.4, and Appendix C of Chapter 6.

As used here, a "facility" means any equipment, structure, system, process, or activity that fulfills a specific purpose. At LBNL, a "facility" for purposes of a facility-based authorization is generally a building, but in some cases the "facility" may be an area within a building but not the whole building. Facility-based authorizations differ from line-management authorizations and formal authorizations in the following ways:

- Line-management and formal authorizations are based on individual activities, whereas a facility-based authorization is a function of some additional aggregate hazard or interaction between multiple operations or is a function of some piece of facility equipment (for example, a paint spray booth or waste treatment facility).
- The operating division is generally not involved in obtaining or renewing facility-based authorizations; the activity is coordinated by LBNL (Facilities for NEPA/CEQA issues;

The need for one or more facility-based authorizations (permits) may be triggered by new programs or facilities, or it may be triggered by changes in existing programs or facilities. Once a facility-based authorization is in place, it must be reviewed periodically to assure that the actual operations comply with the operating envelope established for that facility. In addition, existing programs and facilities must be reviewed periodically to determine if changes in operations may trigger a new facility-based authorization. Facility-based authorizations are an independent constraint that overlay the Work Activity Authorization structure.

7.3 Work Activity Authorization Structure

All work activities must include attention to ES&H and use of the ISMS in order to address and improve the overall ES&H performance at LBNL. This can be accomplished by using the Work Activity Authorization structure and the different authorization levels described in this section. The structure and levels are connected to the safety hazards through the degree of understanding of the hazards and controls and the documentation that exists or is required for Work Activity Authorization. Consideration of environmental aspects and their impacts is required at all levels. This approach provides a single process for addressing the variety of hazards and environmental aspects at LBNL. In each level, there is a range of hazards and/or environmental aspects that are addressed by the type of controls and documentation cited. When a work activity is beyond those commonly performed by the public, preparation of a Job Hazard Analysis and Job Hazard Questionnaire (JHA and JHQ) is required as described in Section 6.4.1.2.

The JHQ/JHA process is designed to ensure front-end identification and understanding of an activity's hazards and environmental aspects, and to facilitate the development and implementation of tailored controls and reduction of environmental aspects. A single JHQ/JHA may be used to cover projects or multiple activities of a similar nature. The JHQ/JHA ensures a conscious formal process for work where there is no self-authorization is allowed. Project participants and, as appropriate, ES&H professionals and Subject Matter Experts are involved in the preparation and authorization process to help ensure attainment of the ISM objectives.

For certain situations, formal work permits are also necessary as described in PUB-3000. These would include AHDs, Laser Safety Documents, Radiological Work Authorizations, Biological Use Authorizations, Accelerator Safety Documents, etc. The hazard-analysis mechanism is identified for each level in the form of the people required to perform the function. PUB-3000 contains necessary specifics for the work reviews at each level as well as other information, definitions, and elaboration. Safe Work Authorizations are addressed in detail in PUB-3000 Section 6.2, and appendixes A and B of Chapter 6.

***Line Management Authorization*.** Work activities beyond those commonly performed by the public and governed by existing ES&H documents are designated as Line Management Authorized work. Such activities require a JHQ/JHA to ensure proper planning, authorization, and documentation. Appropriate work controls are defined by references to PUB-3000 and other applicable existing ES&H documents. Environmental aspects are identified as applicable, or required environmental controls are applied as applicable.

***Formal Authorization*.** A Formal Authorization [e.g., Activity Hazard Document (AHD), Radiological Work Authorization (RWA), or Biological Use Authorization (BUA)], is prepared when (a) it is required by provisions of PUB-3000 or (b) it is mandated by management. This is required whether the work is conducted on-site or off-site if LBNL has management responsibility. Specific requirements are provided in PUB-3000, Chapter 6.

Laboratory operations are designed to comply with (1) Contract 31 requirements; (2) LBNL internal policies, procedures, and standards; (3) federal, state, and local regulations; and (4) other WSS. However, there may be occasions when a specific work activity or facility requires a deviation from these established requirements. In those cases, organizations must request and obtain written authority to deviate from the requirements. This is called an exemption.

8.0 Integration of Program and ES&H Planning

8.1 Introduction

Integration of program and ES&H planning, from the Laboratory Director down to the individual workers, is accomplished following the Institution/Facility/Activity Process using this Management Plan and the division-specific documents. The ISM Management Plan and PUB-3000 and their incorporation of ISMS fundamentals are essential to Laboratory operations.

Worker involvement is an essential part of ISM; therefore, an important integration direction is the formalized upward involvement and connection from workers in all of the functions and assignments. This integration needs to be operative upward through the institutional, facility, and activity processes, as well as from the top down. The Laboratory and the divisions must encourage, use, and recognize the suggestions, ideas, and efforts from the workers. Similarly, because of the LBNL mixed-matrix organizational structure, integrations across divisions and their program, home organization, facility, and services operational functions must also be addressed. These are addressed from the institutional perspective in this Management Plan. The necessary specifics for all directions of integration are contained in the division-specific documents or succeeding documents. The important management chains are also addressed in this section.

Communications and training are critical components of ISMS integration at LBNL. These need to be done at the institutional and division levels, and need to reach everyone in the LBNL workforce.

8.2 Division-Specific Documents

This Management Plan includes requirements that must be fulfilled at the division level. For example, each division must document the roles and responsibilities for positions within their organizational structure from the Division Director to the worker. The organizational structure of each division is tailored to meet the unique programmatic missions with different types of facilities, technical work, hazards, and environmental aspects. Additionally, each division has specific requirements for feedback and improvement that must be documented. To establish the flow-down of ISMS requirements from institutional requirements to the working level, each division develops an ISMS Implementation Plan. These plans tailor implementation of institutional requirements given in PUB-3000 and this institutional Management Plan.

Each division has the freedom to determine the best way to organize its division-specific ISM documentation. It may modify its existing ISM Implementation Plan or other existing safety documentation that succeeded the Implementation Plan, or create new documents. It is each division's responsibility to ensure that all required documents are prepared and shared with division staff, as appropriate. Each Division Director is responsible for approving the ISM

documentation and for the maintenance and configuration control of his or her division's ISMS implementation documents.

8.3 PUB-3000

The LBNL *Health and Safety Manual* (PUB-3000) defines Laboratory safety policies and provides for their implementation as specified by Chapter 7 of the LBNL *Regulations and Procedures Manual* (RPM, PUB-201,). PUB-3000 development is also required for implementation of the DOE Integrated Safety Management program described in this Management Plan.

The requirements in PUB-3000 are based on the Work Smart Standards (WSS) set contained in Contract 31. The WSS set is identified for the specific work and associated hazards, environmental aspects, and best management practices that have been determined to be LBNL requirements. PUB-3000 also describes the implementation of the ES&H management commitments made in this Management Plan.

The EHSD Director is responsible for developing, maintaining, publishing, and supporting the implementation of PUB-3000 and its supporting documents. A PUB-3000 Manager is designated to coordinate administration of the document and its updates. PUB-3000 is organized by chapters that address specific technical or administrative ES&H subject areas, and each chapter has a Responsible Author who usually is a Subject Matter Expert (SME) for the material covered by the chapter. Some chapters address multiple subjects, in which case the Responsible Author serves as an editor for multiple SMEs who contribute to the chapter's technical contents. The Chapter Responsible Authors and SMEs are responsible for keeping the content of their chapters current. The Chapter Responsible Authors are responsible for creating or utilizing mechanisms that involve appropriate workers in the development and maintenance of compliant and effective safety programs (chapters). An example of mechanisms that support worker involvement would be using members of safety committees, such as the Electrical Safety Committee or the Institutional BioSafety Committee. Other mechanisms could include soliciting appropriate worker participation during safety meetings, etc.

The LBNL Safety Review Committee (SRC) reviews and approves changes to ES&H Policy, as defined in PUB-3000, and any references or related documents that are necessary to implement ES&H policy at LBNL. The SRC Chair publishes a list of these "applicable" documents annually on the committee's Web site. For matters of policy where the SRC chair determines that additional management review is necessary, the SRC refers proposed policy changes to the Laboratory Director with specific recommendations for review and approval.

The following controlling principles for PUB-3000 provide the basic requirements for the use, maintenance, and availability of PUB-3000.

- LBNL conducts work in accordance with PUB-3000.

- The EHSD Director develops and maintains PUB-3000 through SMEs and Laboratory Director committees, such as the SRC.
- The use of PUB-3000 is supplemented by SMEs and the EHSD liaisons who assist in the interpretation and implementation of the applicable requirements. The EHSD Director is responsible for maintaining both the Subject Matter Experts and the EHSD liaisons for all of the broadly applicable topics.
- LBNL will update PUB-3000 on an ongoing basis through the SMEs and the Laboratory Director–appointed committees to ensure incorporation of requirements in the WSS set in Contract 31.
- LBNL addresses the technical accuracy, efficacy, and completeness of PUB-3000 on a continuing basis. The review schedule for the PUB-3000 is developed and maintained by the PUB-3000 Manager with inputs from the SMEs and Laboratory Director–appointed committees.
- The electronic copy of PUB-3000, available through the LBNL the Web site, is considered the official copy. All users are required to ensure they are working from the official copy. In addition, editable Microsoft Word files of PUB-3000 chapters are available for Responsible Authors and SMEs to download from the PUB-3000 eRoom.
- LBNL collects, considers, and acts on ES&H Lessons Learned. The Office of Contract Assurance coordinates this effort and addresses Lessons Learned that can be used to improve PUB-3000.
- Any exceptions to the requirements in the WSS set will be addressed in a formal process commensurate with the hazards or environmental aspects involved with any resulting fundamental changes addressed accordingly.
- The PUB-3000 Manager maintains PUB-3000 under a configuration management process to ensure that control is maintained during the development, revision, and communication of requirements from the WSS set to the end users.

With these basic requirements, the EHSD Director, SMEs, and Laboratory Director–appointed committees will continue to conduct the necessary multifaceted and detailed process to incorporate ISM and the WSS set into PUB-3000. The incorporation process used for the WSS set is described in Section 12, “Flow-down of Requirements.”

8.4 ISMS Management Plan

This ISMS Management Plan (PUB-3140) is developed and vetted using the same process and procedure as is used for management of PUB-3000, except that it is reviewed by, but not approved by, the SRC; and it receives approval from the DOE-SC BSO Site Manager. The EHSD Director assigns a publication manager who develops and maintains PUB-3140 through SMEs and Laboratory Director committees, such as the SRC .It is reviewed annually and

approved by the Laboratory Director, EHSD Director, and BSO Manager. The process is found in PUB-3000 Chapter 1, Section 1.11 Appendix.

8.5 Management Chain

The important management chain for each work activity, from the worker and the first-level supervisor up through the responsible Division Director or equivalent, is defined in Section 6.2.3.2; a description and a basic framework of the operational functions, which provide an extension and clarification of the overall structure for the LBNL mixed-matrix organization, are included. With these, a management chain exists for all LBNL operations so that the ES&H responsibility accompanies the funding.

8.6 Integration Across the Laboratory

Another important element of ES&H integration is the horizontal integration across the divisions and the organizations within them. Horizontal integration is especially critical in achieving consistency in the implementation and use of ISM in all LBNL activities. It is also useful in the relationships with the other DOE organizations and particularly where they are working together.

Horizontal integration operates within many mechanisms at LBNL. The process starts with the Laboratory Director, Laboratory Deputy Director, the Chief Operating Officer, and the Associate Laboratory Directors (ALDs), and is achieved at their meetings and in their interactions together and individually. Next is the Senior Leadership, which includes the Laboratory Director, the Laboratory Deputy Director, the Chief Operating Officer, ALDs, Division Directors, and other top-level managers with broad institutional responsibilities.

The Laboratory Director–appointed committees, especially the Safety Review Committee (SRC), provide the critical function of horizontal integration. The established processes for these committees are particularly valuable in addressing the institution-wide issues, actions, and needs. The electronic communications and interactions provide further value.

This Management Plan, PUB-3000, and other ES&H documents, are major factors in horizontal integration. The availability of these on the LBNL Web site as well as the growing number of computerized aids for filling out forms, making evaluations, and reporting greatly increases the horizontal integration and the attendant values. Other entities across the Laboratory that contribute to horizontal integration include:

- Division Safety Coordinators and EHSD Liaisons and their meetings and interactions.
- Procurement and Property Management connections with the division buyers.
- Structures within divisions, like Engineering and Computational Research, that provide matrix support to many parts of the Laboratory.

The regular meetings of the senior managers are commonly used for ES&H topics and are important in the horizontal integration.

Horizontal integration is greatly assisted by the communications and training addressed in the next section. The Laboratory-wide communications program and the institutional training courses help ensure that the ISM messages are consistent and clear.

8.7 Communications and Training

ISM communications have the long-term goal of helping to change the Laboratory's ES&H culture. The strategy behind long-term communications and training is to position the concept of "workplace ES&H" alongside those of "scientific excellence" and "quality work" in everyday Laboratory life. This is being done by placing the subject of ES&H and key ES&H messages in front of employees frequently, using a variety of media, making sure employees have appropriate training, and by involving employees in identifying and solving ES&H problems.

ES&H communications, including training, will be a continuing effort at LBNL although the tone and emphasis on specific topics will change depending on current issues, employee input, and program actions. Integral to the program will be management leadership, personalized messages, continuity of effort, consistency of discussion, and capitalization of employee values, such as people's pride in the organization, their loyalty, and dedication to excellent work.

The steady flow of communications is designed to prevent overwhelming employees with messages concerning ES&H. The sustained effort will create the expectation that ES&H is part of everyday work discussions. These discussions will be enlivened by new topics presented periodically and revisiting others as needed.

Many different communication tools and approaches are being used to engage employees at all levels. Planning includes campaigns to promote awareness of specific concerns such as eye protection or pollution prevention, expanded development and communication of Lessons Learned, promotion of the online PUB-3000, communications guidance for supervisors, computer-based information sources, and special events. Feedback mechanisms will be used to identify problems and successes as ISM continues to mature.

Repetition of message: The objective here is to keep the subject of "ES&H" at the top of the LBNL agenda. A key element is maintaining employee awareness of ES&H issues using a variety of media. Communication begins with expectations being stated and discussed at senior management meetings and other management communication opportunities, and encouraging the practice to cascade through all organizations. *Berkeley Lab View*, *Today at Berkeley Lab* (TABL), and the ES&H Web site have an important role in the ES&H awareness effort. They regularly cover topics such as ISM successes, Lessons Learned, updates on the LBNL ES&H record, ES&H awards, and programs to hold employees accountable for following ES&H requirements. Other activities include the following:

- Periodic focus groups to allow management to hear directly from employees about ISM issues, and to demonstrate sustained management interest in the maturing and continual improvement of the ISM processes.
- Programs of monthly topical communications regarding both work-related and off-hours ES&H concerns. Communications planned on work-related topics include slips, trips, and falls; safe handling of poisonous materials; electrical safety; building safety; ergonomics; and protection of the environment.
- Development of resources to improve ES&H communications between first-line supervisors and employees. This includes specialized training, and Web-based and printed information.

Promotion of off-the-job ES&H: Excellent ES&H programs around the country promote off-hours ES&H as well as ES&H while working. The Laboratory will emphasize off-the-job ES&H during many of its monthly promotions. This includes issues such as poison prevention, bicycle safety, preventing sports injuries, safe driving, fire safety, and special precautions to be taken during the winter and holiday season. Environmental issues include conservation of natural resources, protection of wildlife, water and air pollution, and generation of solid and hazardous wastes.

A variety of media is used to promote off-the-job ES&H. These include posters, instructional flyers, videos, signs and banners, and activities such as demonstrations, speakers, and periodic safety fairs.

Participation of senior management: The vigorous participation of senior management is critical to the success of ES&H communications programs. Experiences at other sites, plus comments made by Laboratory employees, underscore this need. Examples of management activities conducted are walk-around programs, writing Director's Office columns *for Berkeley Lab View*, and having Division Directors sponsor division-led ES&H promotions. Another important element is educating managers to the proper use of LBNL's case-management program. Management's vocal endorsement of ES&H efforts plus ongoing visibility regarding ES&H issues are important ingredients of this "best practice."

Continuous training: Relevant training for employees at large has been incorporated into the existing training structure. This will assure that new employees receive ISM training, and that those moving from one division to another will receive specific training as appropriate. In addition, proper use of the JHQ/JHA, etc., assures that employees receive training needed for specific work assignments.

Reviewing the training needs of specific segments of the employee population is another important ongoing activity.

New curricula are being used as they are developed and approved.

Employee involvement: This aspect of the program involves encouraging employees to participate in identifying ES&H problems and developing solutions, including revising policy or procedures, rather than management attempting this entirely on its own. Examples of activities being used to encourage participation include employee participating in the development of Laboratory policies and procedures, employee participating in key Laboratory safety committees such as the Safety Review Committee, and employee participating in continuous improvement activities such as incident investigations and division self assessments

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9.0 Program and Budget Execution Guidance

9.1 Internal Process

Laboratory management is responsible for planning work and for ensuring that ISMS requirements for working safely while minimizing environmental impacts are incorporated into all activities, and are addressed in the prioritization and allocation of resources. ES&H is a primary consideration in planning and executing all work activities.

There are four primary ways ES&H and related functions are funded at LBNL:

1) General and Administrative (G&A) for institutional activities
2) Unified Project Call Process for line item, general plant projects, and capital equipment projects
3) Service centers that are institutionally approved and recharged to users.
4) Direct programmatic funds.

Budget requests for institutional EHSD functions are funded through the Indirect Budget Call. These requests cover institutional EHSD activities such as waste management, radiation exposure, industrial hygiene, dosimetry, ES&H standards and policies, monitoring, and site-wide environmental permitting. Budget submissions through the Indirect Budget Call are categorized into three types: Target, Over Target, and Investment. In addition, budgets are categorized as either Base and Non-Base budgets. Base budgets are defined as ongoing activities that have no specific end. Non-Base budgets include those activities with an end date and are not ongoing in nature. All budget items are characterized as Base or Non-Base.

Target budgets capture the most important, ongoing operations costs. All costs within this category are assumed to be Base. Over-Target budgets are requests in excess of the Target Budget. These are designed for either new requirements or activities deemed of such an important nature to be included for incremental consideration, or that their exclusion would have a negative impact. With the possible exception of new requirements, Over-Target Requests are prioritized after Target budget activities. Investment budget requests are incremental requests, which are justified by the future financial benefit received from the expenditure. The benefit received can be achieved in future years and must be quantifiable, demonstrable, and not solely for cost avoidance. The institutional justification for these types of requests is future financial savings in excess of costs incurred. The savings could be achieved either within the requesting division's budget, within other institutional budgets, or within the costs charged directly to scientific programs. Lastly, "Fenced Budget" items are defined as items where there is little or no discretion on cost levels such as Fire Department costs.

Institutional Budget Activities (IBAs) are defined as a grouping of costs usually around departments that are consistent with the organization's organization chart. IBAs represent a logical breakout and accumulation point within a department that represents how these activities are managed and how the activities can be communicated to others. The department heads

are responsible for developing and prioritizing budget requests, which are then reviewed by the EHSD Director prior to submittal. All proposed budgets are presented to and reviewed by the Chief Operating Officer.

Berkeley Lab's Unified Project Call Process provides programmatic and infrastructure organizations with the opportunity to examine their operational needs and to submit prioritized candidate Line Item Project (LIP), General Plant Project (GPP), Non-Capital Alteration (NCA), and General Purpose Equipment (GPE) proposals in the budget process. It serves as a vehicle for implementation of the Laboratory's mission as expressed by Laboratory management and documented in Berkeley Lab's Ten-Year Site Plan and Institutional Plan, and facilitates Laboratory-wide coordination of divisional project proposals, Corrective Action Tracking System (CATS) project proposals, and Laboratory infrastructure improvement and expansion project proposals. Lastly, it identifies sources of funding to adapt facilities to new or improved production techniques, effect economies of operations, and reduce or eliminate safety, health, fire, environment, and security problems.

Service centers are established where direct funding is not practical and activities can be charged to users based on usage or some other measure. Institutional service-center examples include site-maintenance costs distributed through the laboratory facility charge, and procurement costs distributed through the material procurement burdens. The institutional service center budgets are reviewed in a manner similar to the Indirect Budget Call. Division Directors are responsible for the general and financial management of service centers in their areas.

In the direct program area, management, from the Laboratory Director down, is responsible for establishing the priorities of the work. Division Directors delegate ES&H authority to managers in their organization; however, Division Directors remain accountable to the Laboratory Director for ensuring that ES&H activities are performed according to LBNL requirements. EHSD provides the necessary ES&H expertise, guidance, and services to assist Division Directors and their management chains in meeting ES&H requirements.

The remaining non-G&A-funded activity within EHSD is the Safeguards and Security Program. The LBNL Safeguards and Security Program is a direct-funded program that employs a risk-based approach to providing cost-effective security for Berkeley Lab. The purpose of the program is to provide an appropriate level of security to protect employees, equipment, and property at the sites both on and off the main LBNL facility. Through strategic planning and cost-benefit analysis, Berkeley Lab determines strategies to provide security services that add value to the scientific programs.

9.2 Performance Objectives and Performance Measures

The University of California (UC) is under contract to the Department of Energy (DOE) to manage Lawrence Berkeley National Laboratory (LBNL). Clause H.14 of Contract number DE-AC02-05CH11231 requires that UC "utilize a comprehensive approach for overall Laboratory management. The performance-based management approach will include the use of objective

performance goals and indicators, agreed to in advance of each performance evaluation period, as standards against which the Contractor's overall performance of the scientific and technical mission obligations under this contract will be assessed."

The mechanism for evaluating the management-based approach is the Performance Evaluation of Measurement Plan (PEMP), which is organized by Goals, Objectives, Measures, and Targets. The performance-based approach focuses on LBNL's performance against these Goals. The DOE Office of Science (DOE/SC) mandates that each SC Lab, including LBNL, establish the same eight goals in the PEMP. Goal 5 is to "Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health and Environmental Protection."

DOE/SC also requires each SC Lab to use the same Objectives to measure progress against the performance Goals. UC, DOE, and LBNL functional managers establish performance Measures and Targets to measure successful fulfillment of these Objectives. Measures identify significant activities, requirements, and/or milestones important to the success of the corresponding Objective and are the primary means for determining LBNL's success in meeting the Objective during the performance evaluation period. Targets for each Measure indicate the "expected" level of performance.

The University of California Office of the President (UCOP) Vice President for Laboratory Management submits an annual Performance Evaluation and Measurement Plan Self Assessment Report to DOE and the Berkeley Site Office. LBNL management works closely with UCOP to develop the report. The primary basis for this report is LBNL's performance against the PEMP, and also incorporates input from UCOP and LBNL management.

An annual Performance Evaluation Report prepared by the DOE/SC/BSO Site Manager provides an evaluation of the Laboratory's performance during the appraisal period. The UCOP/ LBNL Performance Evaluation and Measurement Plan Self-Assessment Report is the primary basis for the annual appraisal of performance, recognizing that DOE/SC will take into account other pertinent information, including operational oversight, program reviews, and audits.

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10.0 Standards and Requirements

10.1 Contract 31 Requirements

Contract 31 stands as the fundamental basis for the operations of the Laboratory. The Contract's current official language and provisions provide the legal basis for all activities. Clause I.79—DEAR 970.5204-2, Laws, Regulations, and DOE Directives (Dec 2000) (DEVIATION0, taken from 48 CFR 970.5204-78 and effective October 1997, contains the fundamental operative statement in (a):

> *"In performing work under this Contract, the Contractor shall comply with the requirements of applicable Federal, State, and local laws and regulations (including DOE regulations), unless relief has been granted in writing by the appropriate regulatory agency. A List of Applicable Laws and Regulations (Appendix I/List A) may be appended to this contract for information purposes. Omission of any applicable law or regulation from Appendix I/List A does not affect the obligation of the contractor to comply with such law or regulation pursuant to this paragraph."*

With the completion of the formal process and approval of the WSS set, as described in the next section, they were incorporated in Contract 31 per I.79 (a).

The WSS set in Contract 31 provides the ES&H requirements for LBNL as of June 2005. These, along with the ongoing actions on non-contract standards and practice, are being incorporated through an established LBNL process into PUB-3000 and other operating documentation (see Section 12.2). Contract 31 contains in Clauses I.79 and I.86 the language providing for WSS and ISM, respectively, and their incorporation upon completion, as described in other sections of this Management Plan.

10.2 Work Smart Standards

LBNL, UC, and DOE used the Necessary and Sufficient (N&S) Process to select a comprehensive set of standards that define the ES&H requirements for LBNL into Contract 31 in accordance with Clause I.86:

> *"Before work is performed, the associated hazards are evaluated and an agreed-upon set of ES&H standards and requirements are established which, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences."*

Applying the N&S process requires the adherence to the DOE Policy, "Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management," DOE P 450.3 (Ref. 3) of January 25, 1996, and the DOE Manual, *The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards*, DOE M 450.3-1 of January 25, 1996. These documents define the process and its required elements.

During the establishment of the N&S Process at DOE, it was determined that the resulting standards should be called Work Smart Standards (WSS).

With these contractual obligations and the DOE Policy and supporting documents, the Laboratory and DOE/SC/BSO initiated the process in May 1997 to select a tailored WSS set applicable to the work at LBNL. The process was formal with structured elements and accompanying documentation. A convened group, which is the process steering committee with members from LBNL, UC, and DOE/SC/BSO, was established to manage and support the successful completion of the process and selection of the WSS set. ES&H professionals from LBNL, DOE/SC/BSO, UC, and other DOE sites working with Laboratory program, facilities, and operations personnel obtained a comprehensive understanding of the work and hazards, including environmental aspects, and established the appropriate set of standards that when implemented will provide adequate protection to the workers, the public, and the environment. All personnel involved were selected individually by the convened group upon review of credentials against established participation criteria. All participants were trained to the DOE-approved training modules.

The N&S process, using a team approach, focuses on the work and its associated hazards and environmental aspects to select those standards that provide the appropriate level of safety and environmental protection. For LBNL, the work and associated hazards and environmental aspects were identified for a carefully chosen set of representative facilities. Based on this information and extensive knowledge of ES&H standards, the Standards Identification Team selected the appropriate standards that collectively apply to the institution. These standards were reviewed internally and confirmed to be appropriate and feasible by an outside independent team of ES&H experts. With the satisfactory completion of the confirmation step in March 1999, the WSS set was forwarded to the approval authorities, the LBNL Director, and the DOE/SC/BSO Manager; was signed August 1999; and was incorporated into Contract 31.

The WSS set is important as an input to the ISMS and as a key operational component for developing controls. It also fulfills Guiding Principle 5: Identification of Safety Standards and Requirements, in a conscious, organized, and broadly reviewed manner. The evaluation of work at the facility and activity level, as described in Sections 6 and 7 of this Management Plan, uses the WSS set obtained by the N&S process. Establishing the WSS set while the ISMS Management Plan was in preparation allowed the appropriate connections to be made and to align them both with the current thinking and needs. In the relationship between WSS and ISMS, the WSS set provides the general and specific requirements tailored to LBNL activities, and the ISMS establishes the structure and implementation mechanisms for using the WSS set as the basis for performing work safely while minimizing environmental impacts.

10.3 Maintenance of Work Smart Standards

As changes occur, there will be new knowledge, technologies, and issues, along with new laws, regulations, and standards. Consequently, the WSS set in Contract 31 must be reviewed and

updated periodically, using a formal process. A formal Change Management Process for the WSS, using the principles of the N&S Process, is described in Appendix C. The Change Management Process provides an important opportunity to keep the WSS set up to date and includes provisions for addressing new and special situations that might arise from any source.

This process has resulted in revisions to the WSS set, such as in 2007 when the set was revised to include 10CFR851, DOE Worker Safety & Health Program.

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11.0 Evaluating and Resolving Non-compliances

11.1 Requirements

Under the provisions of Contract 31, the Laboratory and the University of California Office of the President conduct an annual institutional-level self-assessment to evaluate its management performance in a number of administrative and operational areas, including ES&H. This self-assessment is made against a set of Performance Goals, Objectives, Measures, and Targets (see Section 9.2). DOE/SC/BSO reviews and verifies the self-assessment report and the Laboratory's performance.

Annual institutional-level self-assessment, OCA evaluations, and other special reviews are accompanied by DOE-SC/BSO management through appraisals of the Laboratory, which include several ES&H areas.

In addition to the institutional assessments, LBNL has a well-developed, ongoing self-assessment program that is specified in the PUB-3000 and PUB-5344. These Laboratory organization self-assessments evaluate the effectiveness of adherence to ES&H requirements and implemented controls at both the facility and activity levels.

The formal self-assessments of the Laboratory provide the status at a particular time. Also important are the wide variety of ongoing, multifaceted review processes conducted by LBNL personnel that provide timely information and insight on the status and performance at each level within the Laboratory.

11.2 Corrective Action Process

The deficiencies identified in operations and facilities resulting from self-assessments, audits, reviews, appraisals, and occurrence reports by Laboratory and external oversight entities are reviewed to determine appropriate corrective actions. The objective of this process is to improve safety while minimizing environmental impacts in the workplace and assure compliance with ES&H requirements. The responsible management chain assigns responsibility for implementing actions to correct self-assessment deficiencies and uses the Corrective Action Tracking System (CATS) to monitor the status until the actions are completed and verified. For institutional and cross-cutting issues and deficiencies, the assignment of responsibility is made by the Chief Operating Officer. Findings and issues from appraisals, audits, and reviews of operations are documented in reports and put into CATS. In response, management develops action plans to correct the identified operational and management problems when appropriate. The plans include schedules for completing the corrective actions and provides for regular reporting, as required, to the agency or office that conducted the appraisal until all deficiencies are closed out.

A corrective action process is also implemented by management in response to findings and judgments-of-need identified in Accident Analysis or Occurrence Reports. PUB-3000 contains a description of the Laboratory's accident analysis and occurrence reporting processes and follow-up requirements. Corrective action plans are also being developed as a result of the analysis of immediate, contributing, and root causes of DOE-reportable occurrences. The primary objective in formally reviewing incidents, accidents, and other occurrences is to prevent the recurrence of the event and to reduce risk in a specific operation or facility.

11.3 Corrective Action Tracking System (CATS)

The Laboratory has implemented a Web-based system to track assessments, deficiencies, issues, and corrective actions. The system is known as the Corrective Action Tracking System (CATS). It serves as the means for LBNL management to identify, track, and review resolution of institutional deficiencies and issues. Deficiencies are coded so that trending of findings can take place. Each division enters and maintains its deficiencies and issues on the CATS database. The system is administered by the Office of Contract Assurance.

12.0 Flow Down of Requirements

12.1 Basics

The LBNL institutional ES&H requirements apply to the entire Laboratory workforce. These are contained in the WSS set in Contract 31. Chapter 7 of the LBNL *Regulations and Procedures Manual* (RPM, PUB-201) specifies implementation of these requirements through the ISMS process and through PUB-3000. The ISMS provides the process to connect the WSS set to the work, implement it, and to conduct work safely while providing responsible environmental stewardship. By executing work in accordance with the controls developed from the WSS set through PUB-3000 requirements, the workforce, the public, and the environment are adequately protected.

The LBNL ISMS process incorporates the tailoring of requirements in addressing mission needs, and the hazards and environmental aspects associated with them. As the range and scope of work activities change, the associated hazard controls, including regulations and standards, are adjusted in response to the changes. This Management Plan and PUB-3000 provide the institutional approach for integrating ES&H requirements into the processes of planning and conducting work and are the basis for alignment and content of the lower-level ES&H documents. The ISMS becomes more detailed and specific in the lower-level documents that provide the organizational structures (divisions, groups, and departments) and operational processes.

Laboratory operations are addressed through ES&H management processes and controls contained in PUB-3000 and other documents. These processes include management direction for planning and conducting work activities, and facility management for work performed on the LBNL sites, as well as for work performed by LBNL personnel at other locations.

PUB-3000 and other institutional level documents establish the processes to be used by Laboratory programs and organizations, facilities, and the Laboratory workforce. These documents include formal processes, including configuration management, used throughout the Laboratory for applying and establishing institutional-level requirements and practices locally at the facility and activity levels.

As hazards or environmental impacts increase, so does the formality, intensity, and redundancy of controls and assurance measures. Laboratory manuals and institutional documents define the explicit institutional consistency for formality of planning, documentation of process activities, record keeping, the level of independence of people involved in their review, and confirmation of adequacy needed for establishing facility- and activity-specific expectations. They allow the established requirements to be appropriately tailored to meet specific needs of facilities and activities while covering a wide range of work and the associated hazards and environmental aspects. These manuals and other institutional-level documents also establish Laboratory requirements for other areas of ES&H management that involve the development and tracking of corrective actions, such as occurrence reporting, accident analyses, and self-assessment and

improvement processes. Similarly, they establish technical requirements and often prescribe explicit administrative and engineered controls for specific hazards. The required controls are mandatory anywhere throughout the Laboratory where the work activity manifests similar hazards.

12.2 The PUB-3000 Process

The process for establishing LBNL's ES&H requirements involves three key steps:

1) Development of the WSS set to accommodate changes in the range and scope of LBNL work and incorporation of the set into Contract 31 (see Section 10).
2) Identifying new and changing laws and regulations, Contract 31 requirements, and UC policies as applicable to current and new work at LBNL. This is accomplished by the WSS Change Management Process.
3) Incorporation of the appropriate requirements from the WSS set into PUB-3000.

The overall process is described in the following subsections and is shown in Figure 12.1.

12.2.1 Identification of Requirements

LBNL's ES&H requirements are derived from numerous sources, but come primarily from federal, State of California, regional, and local statutes, regulations, and ordinances; DOE directives; national consensus standards; and University of California policies. The range and scope of work at LBNL is dynamic, as are the regulatory and contractual requirements. As both change, the necessary and sufficient standards set is adjusted. . These are all included in the LBNL WSS set and incorporated into Contract 31 as described in Section 10.

LBNL relies primarily on the professional staff in its institutionally managed EHSD staff, the Office of Contract Assurance, and the Office of the Laboratory Counsel to monitor for new and changing regulations and DOE directives that pertain to the work, its associated hazards and environmental aspects at LBNL, and the standards in the WSS set. LBNL interacts with regulatory agencies, UC, and DOE staff through meetings and site visits. The Laboratory also makes heavy use of modern communications systems as part of its information resources. When requested, ES&H experts and programmatic personnel review and comment on proposed revisions to existing DOE directives, new directives, and proposed rules.

12.2.2 Evaluation of Requirements

EHSD Management assigns staff personnel to review, interpret, and analyze proposed and final regulations, rules, and DOE directives. These reviews assess whether the potential requirements specifically apply to the work performed at LBNL and, if so, decide (1) whether compliance actions will have to be implemented Laboratory-wide or limited to only one or a few organizations, and (2) when they become effective through the WSS Change Management Process. Detailed considerations are made of the scope and use of potential requirements, whether they have Institutional Scope and Broad Use, Specific Scope and Broad Use, or Specific Scope and Narrow Use (see Section 14.1 for definitions) to direct and use them

properly. The potential impacts on Laboratory operations are also evaluated (e.g., the need for additional training, record keeping, reporting, new instrumentation systems, and modifications of existing facilities and operations).

The next step involves a review of the analysis of new requirements and impacts by Laboratory Director–appointed committees, particularly when institutional implementation of requirements is indicated, and significant costs are associated with compliance. The organizations represented on these committees provide feedback to the ES&H professionals on programmatic and cost impacts and the practicability of proposed implementation actions.

In some situations, the impact of a requirement or standard is limited to a small group of individuals or a specific department. These limited impact requirements may be handled directly by the affected organization through its Subject Matter Experts.

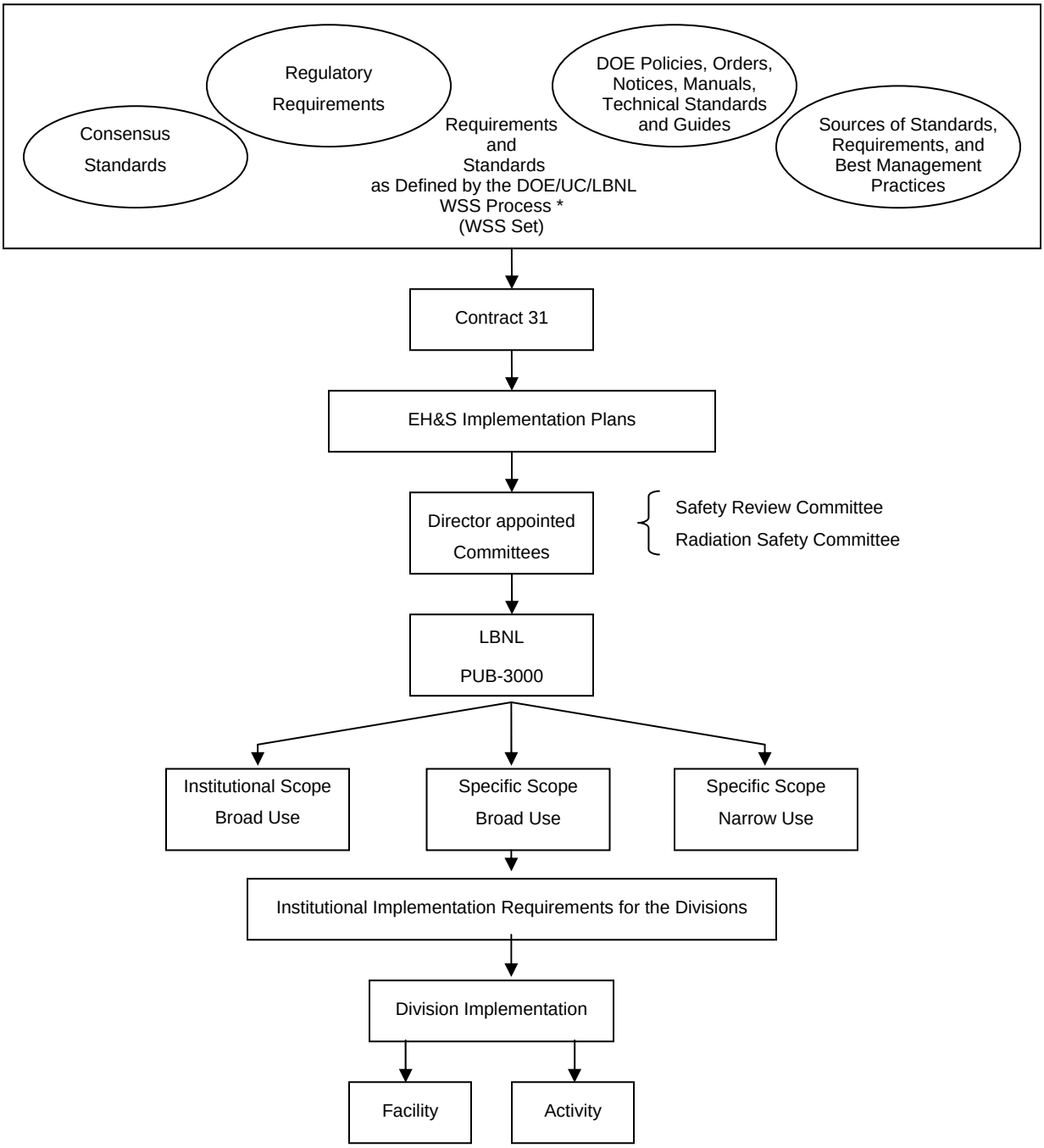
12.2.3 Incorporation of Requirements

A variety of activities may be used to communicate new requirements once they have been determined. These include establishing a timeline for implementation and determining how the requirement will be added to the documentation base. This may result in a new policy or guidance document or a modification to existing documentation, such as a modification to PUB-3000.

PUB-3000 is developed and revised to aid management in integrating requirements into Laboratory work activities. This manual either contains specific requirements or points to other documents containing the requirements applicable at LBNL. Generally, if the requirements are applicable to only a small subset of individuals at LBNL, or if the requirements are extensive and complex, PUB-3000 will merely point back to the original requirements. In those situations when PUB-3000 provides pointers, ES&H professionals will assist in the interpretation and implementation of the applicable requirements.

12.2.4 Requirements to Users

Individuals responsible for work activities are responsible for ensuring that the hazards and environmental aspects associated with the work are analyzed and controlled according to PUB-3000. Controls in PUB-3000 or those identified by the ES&H professionals are to be implemented by those performing the work activities, unless an exemption from those controls has been appropriately approved. The Laboratory has a formal process for obtaining exemptions and variances described in Section 12.6.



* DOE M 450.3-1, DOE Closure Process for Necessary and Sufficient Sets of Standards

Figure 12.1 Information Flow-Down Process for the PUB-3000 and Implementation.

12.3 Subcontractor ES&H Management

In ISM, the necessary focus of the subcontractor requirements is on the safety of the workers and the impact their actions have on the environment. Basic to all of the requirements are those in Contract 31, Clause I.79. In the LBNL ISMS, the core requirements for subcontractors are in Section 6.2.3.4. Application of these requirements, appropriate core requirements in Section 6, provisions of Section 7, and PUB-3000 are necessary to meet the subcontractor ES&H management responsibilities.

The Procurement and Property Management Department (P&PM) is responsible for ensuring that ES&H requirements are included in the subcontractor operational process and procedures that control how subcontractors perform work for LBNL. The system to accomplish this must involve the organizations requesting the subcontract work and, as necessary, the appropriate EHSD SMEs and Liaisons. All are critical elements of the system, and have their own particular responsibilities in a structured process defined in Section 6.2.3.4. The system ensures that appropriate subcontract-ES&H requirements are included in contractual language that binds the subcontractor to maintain alignment with the established procurement practices. These ES&H requirements include the applicable ES&H clauses and standards.

The system includes the details of the Laboratory's oversight responsibilities for a subcontractor's ES&H management system in the subcontract language, ensure the flow down of appropriate ES&H requirements, and ensure that subcontractors are evaluated and selected on the basis of historical ES&H performance and other relevant criteria. Additional information and elaboration are in PUB-3000and the P&PM Department Procedures.

12.4 Procurement and Property Management

The procurement of goods and materiel is a key function to be addressed as part of ISM. This is accomplished in the LBNL ISMS through the use of a procurement ES&H management process that determines the hazards and environmental aspects of the goods and materiel to be procured, received, and delivered to the point of intended use. The process provides a hazards and environmental-aspects determination for ordered goods and materiel that are hazardous, dangerous, or toxic. The planned use of these is addressed in the work-activity evaluation, documentation, and authorization process defined in Section 7.3 (i.e., a JHA).

In the procurement ES&H management process, the requesting organization is to provide the procurement entity with the proper hazards and environmental-aspects determination so that the ES&H responsibilities can be fulfilled. This is consistent with the ES&H requirements in Contract 31, the applicable core requirements in Section 6, the provisions of Section 7, and PUB-3000. In the process, the organization requesting the goods and materiel evaluates and determines the hazards and environmental aspects of the goods and materiel being ordered. The appropriate EHSD SME and/or Liaison assist in this process, as necessary. The resulting hazards and environmental-aspects determination is provided to the procurement entity along

with the purchase request. P&PM maintains the necessary procedures for the conduct of this process. Additional information and elaboration are in PUB-3000 and the P&PM Procedures.

12.5 Lessons Learned

Lessons Learned are shared to improve operational ES&H by benefiting from the experience of others. Lessons Learned are prepared and distributed whenever there is an opportunity to share a valuable new work practice or warn others of an adverse practice, experience, or product. The core requirements for Lessons Learned are defined in Section 6.7.1.6.

LBNL has an established Lessons Learned program. It includes the basic elements presented in DOE Standard *Development of Lessons Learned Programs*, DOE-STD-7501. This standard is used as it is included in the WSS set, and provides guidance in the daily conduct of the LBNL Lessons Learned program. Lessons Learned form an integral part of the Laboratory's ISMS and represent an important mechanism in accomplishing DOE Core Function No. 5—Provide Feedback, and Continuous Improvement.

The Lessons Learned Administrator (LLA) in the Office of Contract Assurance conducts the Lessons Learned program. The LLA, in relation to the core requirements, is responsible for:

- Gathering and analyzing information while focusing on issues most relevant to LBNL operations.
- Coordinating a review of prospective Lessons Learned by the various ES&H organizations, including the SRC and Division Safety Coordinators.
- Distributing Lessons Learned in a timely manner.
- Posting Lessons Learned on the LBNL internal Web site.
- Serving as a point of contact for follow-up and feedback to the Laboratory, as necessary, on actions taken in response to Lessons Learned.
- Transmitting Lessons Learned to DOE through DOE's Web site for Lessons Learned.

Divisions should encourage employees to bring to the attention of their supervisor or Division Safety Coordinator topics that could serve as possible Lessons Learned. Each Division Safety Coordinator, in consideration of the core requirements, is responsible for:

- Ensuring distribution of Lessons Learned to appropriate LBNL personnel.
- Bringing to the attention of the SRC appropriate Lessons Learned in a timely manner.
- Identifying Lessons Learned that require follow-up action, and providing information to the Lessons Learned Administrator regarding what action has been taken.

- Identifying Lessons Learned from his or her division to be forwarded to the Lessons Learned Administrator.

12.6 Exemptions and Changes

The Laboratory has formal processes, described in PUB-3000, by which organizations and individuals can seek deviations, exemptions, variances, or waivers to institutional requirements contained or referenced in PUB-3000. Given valid justification, organizations and individuals can obtain a particular exception from established institutional requirements as long as equivalent or compensatory measures are in place to meet requirements. The exception nomenclature, the necessary accommodations, and approval levels depend on the requirement specifics. This may require DOE or other governmental agency approval.

PUB-3000 and other ES&H institutional documents can be changed at the discretion of the Laboratory as long as they remain consistent with the requirements in Contract 31 and this Management Plan.

Changes to existing ES&H policies and procedures or the generation of new ES&H policies may be proposed by a division, the ES&H staff, a Laboratory Director–appointed committee such as the SRC, or other senior managers. New ES&H policies or major changes to existing ES&H policies and procedures are recommended by the relevant SMEs or appropriate Laboratory Director–appointed committee to the EHSD Director for approval.

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13.0 Definitions and Acronyms

13.1 Definitions

Assure	To verify that something was done.
Authorizing Individual (AI)	The person designated by an authorizing organization who is responsible for a work activity's technical, financial, administrative, and ES&H objectives. Also the individual authorized by the Division Director (or his or her designee) to accept and manage, on the Laboratory's behalf, the risks associated with the work activity. This person authorizes the work to proceed only after all controls are implemented and confirmed.
Authorizing Organization (AO)	The Laboratory organization (e.g., division or group) responsible for a work activity's performance. This includes ensuring adequate funding and determining work priorities.
Base skills	The skills, knowledge, and abilities (SKAs) necessary for a particular vocation and level.
Commonly performed by the public	An activity with hazards and environmental aspects commonly accepted; the control of which require little or no guidance or training to perform the work safely while minimizing environmental impacts.
Division	The set of organizational elements (e.g., departments, divisions, groups, programs, projects, offices) operating within the management responsibilities and authority of a Division Director
Ensure	To cause something to be done, either by doing it or by following up on assignments and delegations to verify that something was done. To guarantee a particular outcome. The Laboratory uses this term when referring to situations involving direct responsibility for activities, as in the case of the Safety line manager.
ES&H Professionals	The LBNL Subject Matter Experts and members of the ES&H Teams.
Environmental aspect	An element of an organization's activities, products, or services that can interact with the environment.

Environmental Management System	The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.
Facility	A building, group of buildings, or specific area of the Laboratory that is managed by a single responsible Associate Laboratory Director (see Facility DIVISION DIRECTOR). May also be used to indicate a portion of a building, such as a laboratory or group of laboratories dedicated to a specific operation.
Graded approach	A method that provides for varying levels of rigor and formality when applying controls commensurate with the hazards and environmental aspects involved. To ensure that the depth of detail required and the magnitude of resources expended for operations are commensurate with each facility's programmatic importance and potential environmental, safety, and health impact.
Hazard	A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility.
Implementation Plan	A documented plan describing how requirements and expectations will be accomplished. Following implementation at the division level, divisions may transition the Implementation Plan to other established division plans or documents (e.g., ES&H Management Plans, ISM Management Plans, and QA Plans) that satisfies the requirements specified in this Management Plan.
Institutional Scope and Broad	Requirements that are general in scope and apply broadly to the Laboratory. Examples include general ES&H programs (e.g., industrial hygiene, industrial safety, health physics, and pollution prevention), training, and quality assurance. The requirements for hazards and environmental aspects frequently encountered at the Laboratory are generally specified in the PUB-3000.
Organization supervising work	An organization distinguished by having responsibility for supervising or watching over the performance of people involved in carrying out a work activity and ensuring that work requirements are met.

Home/Payroll Division Director	Division Director who provides technical and specialty personnel to support program activities directly and by matrixing personnel to support the activities of other divisions. Responsible for the technical and specialty qualifications, basic job training, and administrative support. Also described as an administrative Division Director.
Program Division Director	Division Director who provides program deliverables through control of and use of funding. Responsible for work authorization, technical deliverables, ES&H, business management, and staff work direction. Uses the funding for personnel, facilities, and services in own division and buys matrixed “payroll” personnel and other division’s facility capabilities, services functions, and products.
Safety	The word “Safety” has previously been utilized as representing the DOE’s Policy 450.4 (“Safety Management System Policy”) and previously was used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment as defined in DOE P 450.4. Contract 31, Clause I.86, expanded the definition of ES&H by “including pollution prevention and waste minimization.” This Management Plan was revised to place additional emphasis on environmental management. When Safety is footnoted in this document as Safety([1]), it is being cited per DOE P 450.4 and Clause I.86 of Contract 31. In all other cases the utilization of the word “safety” represents safety in the traditional sense.
Safety envelope	The parameters defining the limits for the safe and environmentally responsible operation of a facility or operation. For example, the maximum amount of material, the maximum operating temperature, permit conditions related to a permitted activity (solvent degreaser) and the maximum pressure are boundary conditions that may specify portions of the ES&H envelope.

Safety Line Management	The unbroken linear safety management chain from the Laboratory Director to each Worker. Above the lowest organizational unit in each division (e.g., first line HR supervisor), the chain is defined by the succession of direct reports that establish job assignments, appraise performance, and determine salaries. Below the first line HR supervisor level, the chain can include Workers at any level, and may include non-management Work Leads who guide the day-to-day activities of one or more Workers
Safety line manager	A generic term for individuals directly responsible for an operation, activity, or group of activities. The Safety line manager may be at any level within the organization and is formally identified by the activity's authorizing individual. In some organizations, this person is called the work supervisor. In most cases the Safety line manager will be directing the work of others as part of the operation or activity. Examples of Safety line managers are work lead, supervisor, manager, group leader, project leader, project engineer, and principal investigator. The safety line manager is not necessarily a workers's HEERA supervisor.
Self-assessment	An assessment performed by the responsible organization to determine how well they are performing their jobs and meeting their responsibilities.
Self-assessment plan	A formal, management-approved document that describes a division's self-assessment activities and how often they occur, provides a schedule for completing the assessments, and identifies the reports to be generated.
Services Division Director	Division Director who provides "fee for services" functions, facilities, and products. Responsible for work authorization, technical deliverables, ES&H, business management, and staff work directions.
Significant environmental aspect	An environmental aspect that has or can have a significant environmental impact: any change to the environment, whether advise or beneficial, wholly or partially resulting from an organizations activities, products or services.

Specific scope and broad use	Requirements that are relatively specific in scope and apply broadly to the Laboratory. Examples include emergency preparedness, fire protection, and engineering standards. For example, some engineering design standards may pass through directly to the engineers without manuals, guides, etc., to assist the engineers other than the stated recognition that the (design) standards are to be used.
Specific scope and narrow use	Requirements that are relatively specific in scope and apply to a limited set of staff, groups, or activities. Examples include firearms and personnel assurances.
Subject Matter Expert (SME)	An LBNL employee that is a recognized authority in a particular field. This might include a person from ES&H Division, Facilities Division, Engineering, Computations, and so forth.
Tailored controls	Engineered and administrative controls, as well as personal protective equipment, selected from the Work Smart Standards and LBNL's PUB-3000 and designed to fit a particular work activity. Properly tailored controls will address the hazards and environmental aspects, satisfy the applicable requirements, and provide adequate protection to the public, workers, and the environment.
Tailoring	Adapting something—such as a control, safety program, practice, or requirement within the ISMS—to suit the need or purposes of a particular operation or activity, taking into account the type of work and associated hazards and environmental aspects.
Work Lead	A Work Lead is anyone who is authorized by their line management to direct, train and/or oversees the Work and activities of one or more Workers. Work Leads provide instruction on working safely and the precautions necessary to use equipment and facilities safely and effectively. Work Leads need not be Line Managers, HEERA-designated Supervisors, or LBNL Employees. Work Leads are often worker peers, post doctoral students or graduate students. All Work Leads are Safety Line Managers.

Work Smart Standards (WSS) set	The set of standards that is necessary and sufficient to meet LBNL ES&H performance expectations and objectives. The WSS set provides adequate protection for workers, the public, and the environment. All work performed at LBNL and the associated hazards must be covered by one or more of the standards in the WSS set.
Work Smart Standards Subject Matter Expert	A designated LBNL employee with knowledge and expertise relevant to the work or one of the ES&H discipline areas who selects and works with the applicable WSS.
Work review	A review of the integrated set of ES&H controls, resources, and schedules; usually conducted before beginning a work activity.

13.2 Acronyms

AHD	Activity Hazard Document
AHJ	Authority Having Jurisdiction
ANL	Argonne National Laboratory
BNL	Brookhaven National Laboratory
BSO	Berkeley Site Office
CATS	Corrective Action Tracking System
CMB	Change Management Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
DART	Days away or restricted time
Deputy COO	Deputy Chief Operating Officer
DEAR	Department of Energy Acquisition Regulations
DoD	United States Department of Defense
DOE	United States Department of Energy
DOE/HQ	DOE Headquarters
DOE-SC/BSO	Department of Energy-Office of Science/Berkeley Site Office
DOT	United States Department of Transportation
EHSD	The Environment, Health, and Safety Division at LBNL
EMS	Environmental Management System
ES&H	Environment, Safety, and Health (DOE terminology)
G&A	General and Administrative (the principal overhead, indirect cost account funding of Laboratory support activities).
GPE	General Purpose Equipment
GPP	General Plant Projects
HEERA	Higher Education Employer-Employee Relations Act
HHS	U.S. Department of Health and Human Services
IBA	Institutional Budget Activity
ISM	Integrated Safety[1] Management

ISMS	Integrated Safety[1] Management System
ISMSMP	Integrated Safety Management System Management Plan
IWS	Integration Work Sheet
JGI	Joint Genome Institute
JHA	Job Hazard Analysis
JHQ	Job Hazard Questionnaire
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LIP	Line Item Project
LLA	Lessons Learned Administrator
M&O	Management & Operations
N&S	Necessary & Sufficient
NCA	Non-Capital Alteration
NEPA	National Environmental Policy Act
OCA	Office of Contract Assurance
OSHA	Occupational Safety & Health Administration
PAAA	Price-Anderson Amendments Act
PEMP	Performance Evaluation of Management Plan
PI	Principal Investigator
PMC	Program Management Charge
POC	Point of Contact
POPMs	Performance Objectives and Performance Measures
P&PM	Procurement and Property Management Department
QA	Quality Assurance
RRAs	Roles, Responsibilities, and Authorities
RWA	Radiological Work Authorization
SAD	Safety Assessment Document
SKAs	Skills, Knowledge, and Abilities
SME	Subject Matter Expert
SRC	Safety Review Committee

UC	University of California
UCOP	University of California Office of the President
WL	Work Lead
WMP	Waste Management Plan
WSS	Work Smart Standards

14.0 References

1. ANSI/ISO 14001, 1996 Environmental Management Systems.

2. Department of Energy (DOE) Prime Contract DE-AC02-05CH11231 (Contract 31), June 1, 2005 with approved modifications.

3. DOE P 450.4, "Safety Management System Policy," dated October 15, 1996.

4. Memorandum to all Department and Contractor Employees, from Secretary Bill Richardson, "Safety-Accountability and Performance," March 3, 1999.

5. DOE G 450.4-1A, "Integrated Safety Management System Guide for Use with Safety Management System Policies (DOE P 450.4, DOE P 450.5, and DOE P 450.6)", dated May 27, 1999.

6. DOE G 450.4-1, "Integrated Safety Management Guide for Use with DOE P 450.4, Safety Management System Policy, and DEAR Safety Management System Contract Clauses," dated November 26, 1997.

7. Designated Commercial Services List.

8. DOE P 450.3, "Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management," dated January 25, 1996.

9. Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures.
http://www.lbl.gov/ehs/ism/ucb_lbl_partnership_3_15_04.pdf

Appendix A

Division ES&H Plan (Sample Template – 5/04)

The Division Integrated Safety Management Plan is the guiding document developed to implement an integrated safety program for _____ Division/Department. This plan describes the mechanisms that will be applied in the division to ensure that LBNL safety policies and requirements are properly implemented. The Laboratory's ES&H policies and requirements are contained in the:

- Regulations and Procedures Manual (RPM) http://www.lbl.gov/Workplace/RPM
- Health and Safety Manual (LNBL/PUB 3000) http://www.lbl.gov/ehs/pub3000/
- Operations and Assurance Plan (OAP) http://www.lbl.gov/ehs/oap/oap_home.htm
- Work Smart Standards (WSS) set http://labs.ucop.edu/internet/wss/wss.html

This document explains which mechanisms will be maintained in this division to ensure that they are properly implemented.

Description of Division/Department Organization, Mission and Scope of Work

INSERT DESCRIPTION HERE ALONG WITH ORGANIZATIONAL CHART

Accountability

Employees, participating guests, contract labor, contractors, students and visitors are responsible 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. LBNL/PUB 811, entitled, *"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.

Individuals performing work within the division/department are responsible and accountable for ensuring that all activities are carried out in a safe manner, and in accordance with all Berkeley Lab ES&H requirements. This responsibility and accountability cannot be delegated. All contracted work under division/department auspices must be accomplished in a safe manner by

ensuring 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 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 1.5 (Stopping Unsafe Work).
http://www.lbl.gov/ehs/pub3000/CH01.html#_Toc407015329

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. This document delineates responsibility and oversight of safety requirements for work carried out in 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 and Calvin Laboraties, is carried out in accordance with LBNL rules, and that work carried out at UCB is governed by UCB rules. The Partnership Agreement is an appendix in the institutional ISM Plan (Pub 3140). It can be viewed at the following URL: http://www.lbl.gov/ehs/ism/App_G.html

- Lab PIs have an obligation to Berkeley Lab management to provide a safe workplace on campus for all Berkeley Lab-sponsored work. At UCB, this is satisfied by complying with the UCB Safety System.
- Lab PIs are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. The type and method of training will be specified by the organization providing the ESH services or oversight to the space where the work will be performed.
- Lab PIs conducting Berkeley Lab-sponsored work are free to implement controls and other measures beyond the institutional requirements if they deem it appropriate.
- Lab PIs working at UCB can request a joint safety assessment (to be conducted by representatives of both the UCB and LBNL EH&S organizations) to further aid them in ensuring a safe workplace.
- Lab PIs conducting Berkeley Lab-sponsored work at UCB will provide an assurance that they have met UCB standards including properly specifying training requirements (for themselves, workers and students), obtaining and adhering to UCB work authorizations, and meeting UCB self-inspection requirements.

ES&H Committee

The division/department will maintain an ES&H (safety) committee, consisting of a chair representing the division director/department head, one representative from each research group, and the EH&S Division Liaison. The ES&H committee's activities include:

- review, maintenance, and implement the ISM plan,
- analyze SAAR injury and illness data,
- promote ES&H awareness and training,
- review the need for specialized training,
- provide for and/or conduct routine inspections and self-assessments,
- participate in planning for the triennial MESH review,
- develop metrics and analyze pertinent safety performance data,
- advise division management on ES&H issues.

The ES&H committee will prepare an annual self-assessment report for the division director that includes an evaluation of how well this division ES&H plan is implemented. The ES&H committee also will ensure that the division works to improve the effectiveness of the division ES&H program through the dissemination of lessons learned and other appropriate feedback mechanisms.

Scope of Work Authorized

a. General

The original scope of work authorized for this division was established during the 1996 Integrated Hazard Assessment. The inventory of hazards is now incorporated in the Hazard, Equipment, Authorization, and Review (HEAR) database. The scope statement is an important part of the authorization agreement and describes the range of permitted work. Annually, the ES&H committee, in cooperation with the EH&S Division, will review and update this Scope. The principal investigator will bring work outside of this scope statement to the attention of the ES&H committee prior to commencement or contractual commitment to determine EH&S impact.

b. Work Requiring Specific Approval

Each principal investigator 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:

- (List all types of work requiring AHDs, RWAs, RWPs, Safety Notes, Environmental Permits, Biosafety Registration, Waste Permits, Animal Protocols, Telecommuting, etc.)

d. Matrixed Employees

An employee is considered matrixed if the employee has a "home" division or department from which he/she is assigned to work in a "host" division or department and receives daily directions exclusively from the host organization. The host division or department also provides physical space and oversight.

- The employee's supervisor from the home division or department retains all health and safety responsibilities pertaining to matrixed employees, except where some of the responsibilities have been transferred to the host division or department through a formal Memorandum of Understanding (MOU) between the two organizations.
- In situations where an employee is assigned to provide support to more than one "host" organization, the responsibility for employee health and safety remains with the "home" supervisor and cannot be transferred by an MOU.
- The home and host organizations, through a blanket MOU, are to identify the safety responsibilities for their respective supervisors and employees. The following table specifies which responsibilities may be transferred to the host supervisor and those that must be retained by the home organization's supervisor.
- Whenever an MOU is established, it remains the responsibility of the home supervisor to assure that the MOU is appropriately implemented.

- In the absence of an MOU, the home supervisor remains fully responsible and accountable for all aspects of the subordinate's workplace safety and health.

e. Student Safety

Education and training of future generation of scientists and engineers is one of the University's missions and Berkeley Lab has a special responsibility to teach students to do their research safely. Part of teaching them to work safely is to ensure they are provided a safe and healthful work place. This obligation for providing a safe and healthful working and learning environment extends to students, guests, and visiting scholars, compensated or not.

The Division's ISM system should address student safety in: formal work authorizations, line management-authorized work without formal authorizations and Appendix I space on UCB campus.

- Formal Work Authorizations –

  Higher hazard work at Berkeley Lab is subject to formal work authorizations as described in the LBNL Health and Safety Manual (Pub 3000), Chapter 6. Examples of such documentation include: Radioactive Work Authorizations (RWAs), Sealed Source Radioactive Materials Authorization (SSAs), Activity Hazard Documents (AHDs), and Biological Use Authorizations (BUAs), etc.

  It is the line manager's/supervisors/PI's responsibility to ensure students are added to a formal authorization and receive the specified training before they begin work under it. Students, like employees, participating guests and contractors, must follow the authorization's requirements.

  For students who are involved for short periods of time, it is permissible to work under a formal work authorization so long as they are directly supervised by a trained lab employee listed on the authorization.

  Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus formal work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

- Line Management Work Authorization –

  Lower hazards are also described in Chapter 6 which allows line management to authorize work without a formal work authorization. Line managers/supervisors/PIs are required to assess the hazards of such work and prescribe the appropriate controls (engineering and administrative) to address the hazards and to ensure students have appropriate training before doing work.

Use of the LBNL Job Hazards Questionnaire (JHQ) will assist in identifying the safety training necessary to prepare the students to work safely. To utilize this online system, the student must be assigned an employee identification, LDAP username and password. A JHQ must be completed for a student working at Berkeley Lab longer than three months and training must be completed within six months. Students at Berkeley Lab more than one month are to attend New Employee Orientation.

There may be uncompensated students participating in Berkeley Lab research projects for a brief period of time and these individuals may not have an opportunity to receive an LDAP username and password. Under this scenario, Chapter 6 allows for student to work without formal training if the student is "supervised directly by a worker who has already obtained the required training." Those workers assigned this responsibility need to clearly understand their oversight role. This does not relieve the line manager, supervisor or PI accountability for assuring a safe work place.

Divisions that conduct Lab-sponsored work on the UCB campus (exclusive of Donner and Calvin Laboratories) are to follow the ES&H policies and procedures within the "Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures" (See Appendix G). Students need to be: included in campus line management work authorizations before beginning work, trained to the campus standards prior to doing work, and properly supervised.

f. Offsite Work

The safety of division personnel assigned to work off site at non-DOE 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. It is the responsibility of the employee's Laboratory line manager/supervisor to review the scope of work, associated hazards, and necessary controls with the Laboratory employee prior to offsite work. Work involving use of ionizing radiation, non-ionizing radiation, chemicals, biological agents, or exposure to physical hazards (pressure, electrical, mechanical, environmental (noise/heat/cold/vibration), industrial equipment, ergonomics, etc.) will require ISM review.

g.. Telecommuting

Per LBNL policy, RPM 2.23(D)(5), telecommuting is a viable work option under certain conditions. An "Agreement & Authorization For Telecommuting" must be established between an employee and his/her supervisor. Once a telecommuting agreement officially approved, the employee's offsite workspace must be maintained by the employee in a safe condition free from

hazards. If computer equipment (PC, Mac, Laptop) will be used as part of the telecommuting function, the following activities will be required to be completed and documented:

- Completion of ergonomic awareness training using either the ErgoKnowledge CD (CBT) or attending a live classroom (EHS060).
- Completion of an ergonomic self-assessment of the immediate telecommuting work area using the Laboratory Ergonomics Evaluation Form.
- Installation of the necessary ergonomic accessories identified in the self-assessment to assure the telecommuting work area provides controls against ergonomic risks.

Qualification and Training

For every individual engaged in activities other than office work, the principal investigator/supervisor will determine the requisite qualifications to function safely, and will document that the employee possesses these qualifications. Until such qualifications have been established, individuals will only be allowed to work under the supervision of a qualified employee. The LBNL Job Hazards Questionnaire (JHQ) and Training Database are mechanisms used to record course requirements and their completion. Contract labor employees, guests and students who will be at LBNL for more than 30 days are treated in the same manner as career employees for the purposes of training and qualification.

Qualifications include skills, knowledge, training, and certifications required by law or by Berkeley Lab policy. They may be documented in any manner chosen by the principal investigator, provided a copy is made for the employee's personnel file. For contract labor employees, such documentation will be furnished to the ES&H committee. Applicable information from the Laboratory's lessons-learned program and division occurrence reports will be disseminated to employees for accident prevention and hazard awareness.

Qualifications and training will be reviewed by the ES&H committee as part of the self-assessment programs. Performance evaluations (P2R/PRD) of division managers and employees will include review of ES&H performance.

Line managers are responsible for analyzing work of persons under their direction and for assuring that the proper training for safe conduct of the work is identified and obtained. Until an individual has been properly trained, s/he will work under the direct supervision of someone who is already trained. Classroom or specific content training, where required, will be specified by the organization providing ESH services or oversight to the space where the work will be performed.

Reporting Employee Concerns

A variety of formal communication methods have been established at Berkeley which enable division employees to report environmental health and safety concerns or safety suggestions. Employees may file a concern directly with their division director, department head, immediate supervisor, principal investigator or division safety coordinator, as well as seek assistance from , EHS Liaison, EH&S Suggestion Box, EH&S Division, the Laboratory Ombudsman, or the Department of Energy. Persons reporting hazards or improper activities are fully protected by the law and Lab policy against retaliation.

The available reporting mechanisms include:

LBNL Safety Concerns Web Page	http://www.lbl.gov/ehs/refs/safety_concern.shtml
LBNL Internal Whistleblower Hotline (24-hr. voicemail)	1-510-486-6300
U.S. DOE Employee Concerns Program Hotline (24-hr)	1-800-701-9966
EthicsLine (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	H_Reed@lbl.gov <H_Reed@lbl.gov>

Balanced Resources

Principal investigators will incorporate appropriate resource allocation for ES&H concerns in all research proposals, to include provisions for safety equipment, permits, training, maintenance, permits, waste disposal, and facilities modifications. Division management will allocate appropriate resources to implement the ISM plan and program.

EH&S Resources

To facilitate implementation and execution of this division/department ISM program, the following resources are made available:

.x FTE Division EH&S Committee Chair

.x FTE Division EH&S Coordinator

The following resources are made available by the EH&S Division on a matrix basis. They are available to assist principal investigators, the ES&H committee, division management, and

division staff in general with any aspects relating to the implementation of this program. The matrixed individuals are accountable to the ES&H&S Committee Chair.

.x FTE Division Liaison

.x FTE Other EH&S Division staff/subject matter expert(s)

Performance Metrics and Path Forward

The following goals and objectives have been established for the division, based on criteria developed in the Laboratory Self-Assessment Program. As part of the ISM continuous improvement process, the Laboratory's Self-Assessment Program's performance measures are annually reviewed and revised and can be found at the following EH&S Division OCA Web page: http://www.lbl.gov/ehs/oaa/06assess_criteria/DivFY04Criteria_final.doc

- Injury and illness targets
- ES&H training targets
- Waste management targets
- Management system enhancement targets
- Self-assessment inspection targets

Signatures:

Submitted By: _____ _____

Division Director

Date

EH&S Resource Commitment: _____ _____

Howard Hatayama

Date

Acting EH&S Division Director

Accepted: _____ _____

Steven Chu

Date

Berkeley Lab Director

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Appendix B

Implementation Policy and Plan: Employee and Staff Safety Performance Appraisal

A. Policy

Each supervisor shall use the ES&H section of Employee Institutional Requirements (EIR) document as part of their basis for appraising safety performance of staff.

Each staff member must annually certify that they have read and understand the ES&H section of the EIR.

B. Implementation

Responsible Organizations

EHS Division in conjunction with Human Resources: Annually review and revise as needed safety performance expectations and guidance of the EIR and disseminate to the Divisions.

Divisions: Use the safety performance expectations of the EIR and adhere to guidance as tools for annual employee and safety line manager performance appraisals. Divisions are encouraged to add their own safety expectations related to their current safety challenges as part of the Division ISM plan.

Schedule

June: Send out memo to Divisions (Division Directors and their Deputies, Business Managers and HR centers) to remind Managers, Supervisors, and Work Leads to make safety a part of staff performance reviews for the current fiscal year.

Fourth Quarter of FY: Develop safety performance expectations for safety line managers and staff based on the ES&H policy statement in RPM section 7.01, the LBNL and division ISM Plans, and PUB 3000 for the coming fiscal year.

August/September: Review and revise as needed ES&H section of Employee Institutional Requirements (EIR) document

October: Disseminate EIR document and certification guidance to the Divisions for the coming fiscal year.

Process_

All staff shall certify on-line that they have read and understand the applicable requirements of the EIR. The ES&H requirements of the EIR apply to all staff. This certification becomes part of each staff members Job Hazards Questionnaire record.

In addition, ES&H should be included in the Performance review process preparatory to employee interviews and development of Performance Review Document of employees covered by Higher Education Employer/Employee Relations Act.

9/18/07

Appendix C

Lawrence Berkeley National Laboratory

Work Smart Standards

Change Management Process

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Appendices

Appendix 1 – Work and Hazard Review Survey

1 Purpose

The Work Smart Standards (WSS) Change Management Process (CMP) defines how Lawrence Berkeley National Laboratory (LBNL) maintains a set of environment, safety, and health (ES&H) standards tailored to the hazards and activities at LBNL. The WSS CMP is a critical component of the LBNL Integrated Safety Management (ISM) System that provides assurance that employees, the public, and the environment are adequately protected. The CMP also describes how LBNL and the Department of Energy (DOE) Berkeley Site Office (BSO) integrate their WSS change management efforts.

1.1 Background

In 1994, the Department of Energy established an integrated standards-based management system to promote a culture based on environment, safety, and health standards tailored to the work performed and to move away from a "one size fits all" approach. DOE and contractors interact in defining the standards necessary for performing work and providing adequate protection to the worker, the public, and the environment.

After initial DOE trial Necessary and Sufficient (N&S) standards identification projects, LBNL convened a working group that formed its first set of Necessary and Sufficient Work Smart Standards. The LBNL WSS Set was carefully tailored to the work performed at LBNL based on a lab-wide integrated hazard assessment process. Since the emergence of the LBNL WSS Set in 1997, the set has been reviewed and updated on a routine basis. Further details on the history of the Berkeley Lab N&S Closure Process may be found by browsing the LBNL N&S WSS web site link listed in section 12, References, of this document.

1.2 Basis

U.S. Department of Energy, Contract No. DE-AC02-05CH11231 (henceforth referred to as Contract 31), Clause I.86, DEAR 970.5223-1 (see Section 8.1.1), entitled *Integration of Environment, Safety, and Health into Planning and Execution (Dec. 2000),* specifies that before work is performed, the associated hazards are evaluated and an agreed upon set of ES&H standards and requirements are established.

DOE Policy 450.3, *Authorizing the Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management* and DOE M 450.3-1, *DOE Closure Process for Necessary and Sufficient Set of Standards,* establish the use of the WSS process as a means for LBNL and BSO to select an agreed upon set of ES&H standards tailored to the specific work activities at the site and the hazards associated with those activities.

In accordance with the DOE Manual, the LBNL WSS Set in Appendix I of Contract 31 is separated into two sections – Necessary Standards and Sufficient Standards. The LBNL Necessary Standards are those which apply to the site by federal laws and regulations (state laws and regulations and local ordinances are also included if applicable federal laws contain a waiver of federal sovereign

immunity). The LBNL Sufficient Standards are industrial or consensus standards, state laws and regulations, local ordinances, and LBNL internal standards.

2 Applicability

2.1 WSS Set

The N&S WSS Set applies to all LBNL stakeholders (employees, guests and visitors).

2.2 WSS Change Management Process

This process applies to the WSS Steering Committee, WSS Advisory Committee, WSS Coordinator (WSSC), Standards Review Teams, Work and Hazards Review Teams, ES&H Subject Matter Experts (SME), WSS Custodians (WSSCu) and other stakeholders inducted into the WSS CMP.

3 Scope

The N&S process for the determination of Work Smart Standards at LBNL is now in the maintenance life cycle phase. WSS Set maintenance involves a coordinated change management process on the part of LBNL and BSO stakeholders. This document defines the WSS Change Management Process, the roles and responsibilities of the stakeholders, and the relationship of the WSS Set to Contract 31.

4 Stakeholders

LBNL and the Department of Energy are the primary stakeholders. BSO provides the local DOE representation. LBNL and the BSO are the collective stewards of the stakeholder interests on behalf of the public domain and the environment.

5 Roles and Responsibilities

The roles and responsibilities of LBNL stakeholders are provided below.

5.1 Process Leadership

N&S WSS CMP leadership is shared by LBNL and the BSO. WSSCs representing both entities facilitate the overall process and are the primary liaison between all WSS stakeholders. A Steering Committee and an Advisory Committee provide guidance and resolution authority for arbitration of issues that cannot be settled at the WSSC and line stakeholder level. LBNL Environment, Health and Safety Division and BSO senior management serve on these committees. The participants and their respective roles and responsibilities are described below.

5.1.1 *Steering Committee*

The LBNL EH&S Division Director chairs the WSS Steering Committee. The Steering Committee chair inducts committee participants as necessary. The Steering committee:

- Approves the WSS CMP;
- Approves changes to the WSS Set;
- Designates a WSS Coordinator;
- Provides guidance on high level WSS issues;
- Negotiates with the BSO Steering Committee to resolve significant issues for which consensus in Advisory Committee or by WSS Coordinators has been unachievable.

5.1.2 *Advisory Committee*

The LBNL EH&S Division Deputy Director chairs the WSS Advisory Committee. The Advisory Committee chair inducts committee participants as necessary. The Advisory committee:

- Provides advice to the WSS Coordinator;
- Negotiates with the BSO Advisory Committee member(s) to resolve issues on which the WSS Coordinators are unable to reach consensus;
- Promotes issues to the Steering Committee for which resolution has not been achieved at the Advisory Committee level.

5.1.3 *WSS Coordinator*

The WSS CMP is facilitated by the WSSC. LBNL and BSO each provide one coordinator. The LBNL WSSC:

- Is responsible for upkeep of this procedure;
- Initiates the WSS change management review and update processes as described in this procedure;
- Reports WSS CMP status and issues to the WSS Steering and Advisory Committees;
- Ensures the LBNL WSS Set is reviewed and updated;
- Ensures the directive tailoring process is applied to the fullest extent feasible;
- Evaluates and recommends changes to the WSS Set;
- Maintains awareness of significant changes to LBNL work activities, rules, regulations, consensus standards, and DOE directives;
- Ensures applicable standards are included in the WSS set;
- Identifies LBNL SMEs and Technical Program Leads (TPL) to serve on Standards Review Teams for the review of ES&H standards;
- Identifies LBNL stakeholders to serve on the Work and Hazard Review (WHR) Team for the review of LBNL work hazards;
- Assigns a custodian for each standard in the WSS Set;
- Develops and distributes WSS CMP guidance documentation and review schedules;

- With the BSO WSS Coordinator, resolves issues on which the Standards Review Teams and Work and Hazard Review Teams are unable to achieve consensus;
- With the BSO WSSC, provides the BSO Contracting Officer (CO) recommendations for changes in the WSS set and consequently, Contract 31;
- Ensures WSS change management is documented in accordance with this procedure.

5.2 Contracting Officer

5.2.1 *DOE*

The DOE Contracting Officer:

- Interfaces with the WSS CMP through the BSO WSS Coordinator;
- Notifies the BSO WSS Coordinator of new DOE Directives that may be subject to inclusion in the WSS set;
- Uses the process specified in Contract 31, Clause I.86 – DEAR 970.5223-1, Integration of Environment, Safety, and Health into Work Planning and Execution, to incorporate any updates of the WSS Set into Contract 31.

5.2.2 *University of California Office of the President (UCOP)*

The UCOP Contracting Officer:

- Receives the WSS Set changes from the BSO CO;
- Applies the changes to the official WSS Set posted on the University of California, Office of the President, contract web site.

5.3 Standards Review Team

5.3.1 *Lead*

The Standards Review Team Lead[1]:

- Facilitates the WSS review process for the team to which they are assigned (by the WSSC);
- Verifies that each standard assigned to the team by the WSSC or under the custody of the review team is evaluated;
- Assesses the value or need for tailoring (see section 6.1) during the evaluation of new, or changes to existing, DOE directives;
- Provides advice to the WSSC on tailoring issues for specific standards within their review domain;
- Facilitates review team consensus during the review process;
- Prepares the team report and submits the review results to the WSSC.

[1] The Review Team Leader is also a Team Member and fulfills the roles and responsibilities of a Review Team Member.

5.3.2 *Team Member*

The Standards Review Team Member:

- As TPL or SME, maintains knowledge of new rules, regulations, consensus and industry standards, and DOE directives and associated changes to these standards within their area of technical expertise;
- Identifies and nominates newly promulgated or existing[2] standards for consideration as WSS candidates;
- Reviews WSS standards assigned by the Review Team Lead;
- Reviews WSS standards for which they are the current custodian.

5.4 Work and Hazards Review Team

The Work and Hazards Review Team consists of the WSSC, Division Safety Coordinators (DSC), EH&S Division Liaisons, and other appropriate personnel as necessary (e.g., Principal Investigators (PI), Lab Supervisors, etc.). The team validates that the current WSS Set is adequate for:

- Existing work performed;
- New work initiated.

The Work and Hazard Review Team evaluates changes in work activities to determine sufficiency of existing standards and recommend changes as necessary. The team also determines if WSS Set standards are no longer applicable due to work no longer being conducted.

5.5 Technical, Subject Matter Experts and WSS Custodians

Technical Program Leads, Subject Matter Experts and WSS Custodians:

- Monitor the regulatory network that impacts their respective program and subject domains;
- Are custodians of the WSS elements applicable to their subject area as assigned by the WSSC;
- Are cognizant of changes in regulations, codes, ordinances, rules, standards and consensus and industry standards within their program and subject domains;
- Serve on Standards Review Teams and Work and Hazards Review Teams as requested by the WSSC;
- Maintain a general awareness of changes to work activities and/or hazards within the scope of their programs and assigned Laboratory sectors;
- Confer with the WSSC to determine if identified changes in regulations, work or hazards require a WSS update;
- Review their respective PUB 3000 and other LBNL institutional and program documents and procedures to insure that changes in

[2] Existing rules, regulations, codes, consensus and industrial standards, and DOE directives that are not currently in the WSS Set.

requirements based in the WSS Set are translated into documented lab policy (see PUB 3000, How to Request a Revision to PUB-3000);
- Review Job Hazard Questionnaire (JHQ) sections relating to their technical program or subject matter to insure change in the WSS Set is reflected appropriately in JHQ questions.

5.6 Division Safety Coordinators and Liaisons

Division Safety Coordinators and EH&S Division Liaisons support the WSS CMP by:
- Maintaining a general awareness of changes to work activities and/or hazards within their respective divisions;
- Serving on WSS Standards Review or Work and Hazard Review teams when requested by the WSSC.

5.7 Line Management

Laboratory Line Management is responsible for assuring that LBNL ES&H policy is followed in the execution of work under their report. Line management and supervisors plan and conduct their work within the safety envelope defined by the WSS Set by:
- Using PUB 3000 as the environmental, safety and health basis for their work;
- Becoming knowledgeable of specific applicable WSS Set standards while planning and performing their work;
- Reviewing their employees' Job Hazard Analyses (JHA);
- Consulting with the LBNL ES&H TPLs and SMEs;
- Notifying their DSC, Liaison, TPL, SME, or the WSSC directly of new work or conflicts between work they perform and the WSS Set.

5.8 LBNL Safety Review Committee

The LBNL Safety Review Committee must be consulted when change in ES&H policy is brought about. When the WSS CMP identifies changes to the WSS Set that induce changes in institutional ES&H policy, the SRC:
- Reviews and approves new and/or amended ES&H policy generated by TPLs, SMEs and WSS Custodians in response to WSS requirements changes.

5.9 LBNL Employees

Under ISM, LBNL employees engage in their respective work processes with the competency and level of knowledge as determined necessary by their supervisors. Employees engage in the work only after understanding the work scope, nature of hazards, the control of identified hazards, and general safe work procedures as gained through direct supervision, attending courses identified in their JHQ, and development and review of their JHA documents. Where applicable, employees interface directly with individual WSS Set standards, but for the most part are provided the blanket of regulatory requirements as embedded in the respective courses and training and knowledge of ES&H

policies specific to their work. Employees address changes in hazards, work scope or parameters to Line Management.

6 Work Smart Standards Review and Update Process

WSS Set changes are initiated by one of two events: (1) identification of changes to work activities and/or hazards at LBNL (Work and Hazards Review); or (2) identification of changes to rules, regulations, consensus or industry standards or DOE Directives (Standards Review).

6.1 Tailoring and the Graded Approach with DOE Directives

In keeping with the original intent of the Necessary and Sufficient Standards process, it is incumbent on all WSS CMP participants to apply the principles of tailoring in adjudicating and evaluating applicability of standards. Tailoring involves:

- Accepting standards with a “graded approach” when there is limited applicability or “value” in a directive or other standard in its entirety;
- Assuring that a directive or standard proposed for inclusion in the WSS Set contributes direct value to the protection of LBNL workers, the public and the environment;
- Determining how existing Work Smart standards or other LBNL policy or procedure meet proposed DOE directive Contractor Requirements Document (CRD) requirements;
- Packaging an alternative to the proposed DOE directive CRD for submittal to the Berkeley Site Office Contracting Officer.

6.2 Tailoring Process

Contract 31 allows the BSO CO to prescribe that a DOE directive CRD be added to the WSS Set. When this occurs, the WSSC must:

- Initiate TPL or SME review;
- Respond to BSO within thirty days;
- Submit an alternative procedure, standard, system of oversight, or assessment mechanism to the requirements in a listed CRD by submitting to the Contracting Officer a signed proposal describing the nature and scope of the alternative procedure; standard, system of oversight, or assessment mechanism (alternative); the anticipated benefits, including any cost benefits, to be realized by the Contractor in performance under the contract; and a schedule for implementation of the alternate;
- Include an assurance signed by the Laboratory Director that the revised alternative is an adequate and efficient means to meet the underlying objectives of the CRD.

The tailoring effort is applied either to the complete or to individual elements of the newly identified CRD. The BSO CO responds within thirty days with either acceptance of the LBNL tailoring proposal or unilateral decision to incorporate the CRD. See Contract 31 clauses (Section 8.1, Contract References) for exact contract language.

6.3 Change Management

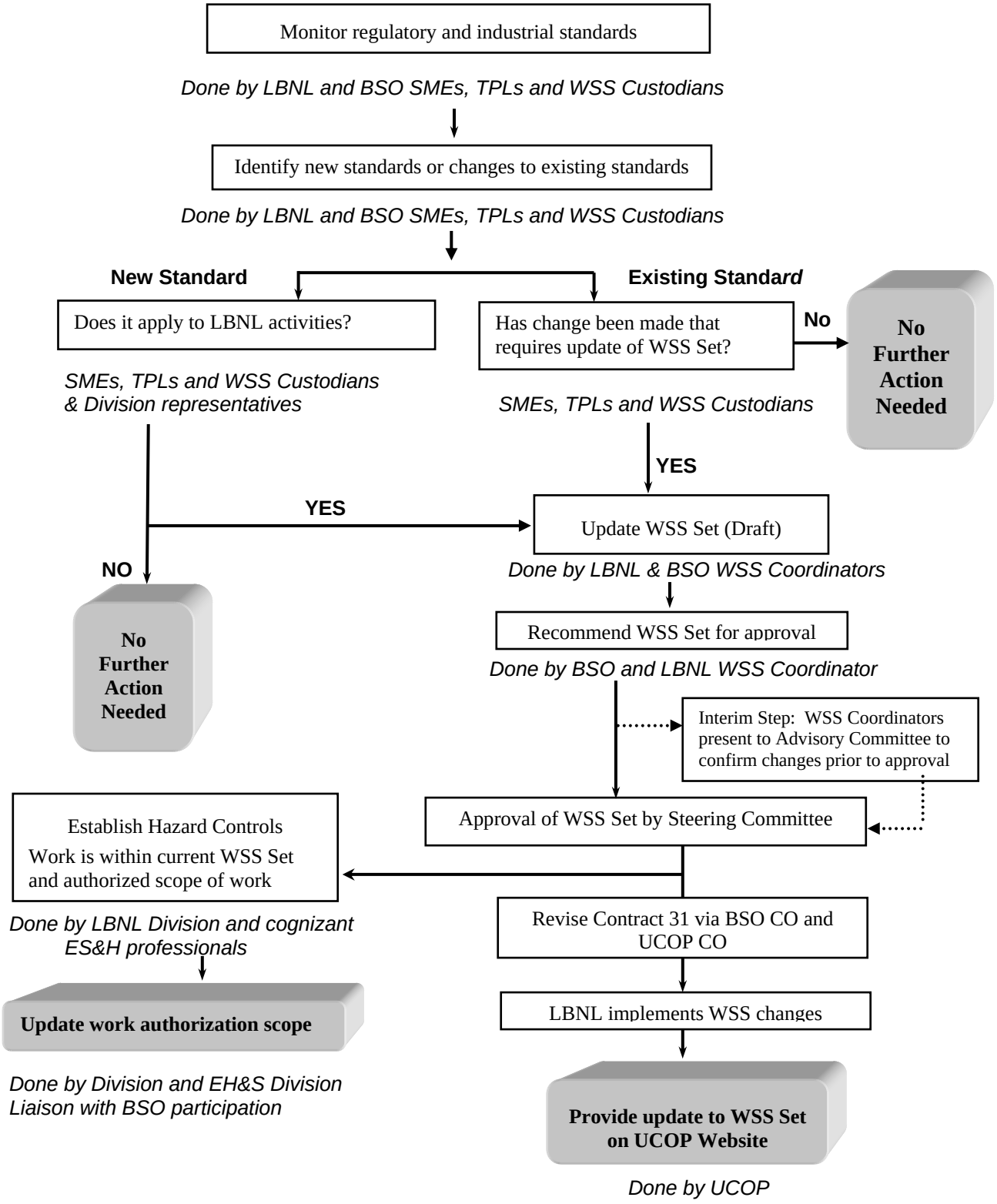
"Change" with respect to the WSS CMP means publication of a new or modification, repeal, or sunset of an existing standard, regulation, code, rule, ordinance, directive or consensus or industry standard. Change may also include re-numbering or other editing of the name, title, reference number or other notation characteristic of the citation. Change additionally reflects the assignment or removal of a standard from the WSS Set due to a change in work at LBNL. WSS change is accomplished through Standards Reviews and by Work and Hazards Reviews.

6.4 Standards Review

Changes in standards are managed according to the process illustrated in Figure 1. The WSS Coordinator may convene a standards review under any of the following categories:

- Real Time – at any time to evaluate one specific standard or DOE directive. Initiated by LBNL or BSO WSSC. Real Time review will typically be conducted when a new, or change in existing, DOE directive is published;

Figure 1 – WSS Change Management Process – Changes in Standards



- Periodic – at a predetermined time to inclusively review a designated subset of, or the complete WSS set[3] (formerly the Annual Review and Update). The periodic interval is determined by the LBNL and BSO WSSCs on advice from the Steering and Advisory Committees. The WSSCs will at least annually assess the need for convening a review of the WSS Set.

6.4.1 *Standards Review Triggers*

The WSSC initiates a Standards Review based on the following triggers:

- Determination by the WSSC, Steering or Advisory Committee that a periodic update and review is required;
- A TPL or SME can alert the WSSC to a change in an existing WSS or to the publication of a new standard (typically a non-DOE regulation);
- A DSC, Liaison, PI, Line Manager or any other employee can alert the WSSC of new work being undertaken that includes an ES&H component not addressed by the current WSS Set (see Work and Hazard Review below);
- Notification by BSO Contracting Officer (via the BSO WSSC) of a DOE directive revision or publication of a new directive that is considered applicable to LBNL operations and is to be considered for incorporation into Contract 31, Appendix I, per contract clause I.86.

6.4.2 *Standards Review Teams*

The Standards Review Teams are designed to include cross-subject but related issue WSS standards to maximize process efficiency and cover each major ES&H functional area. A Review Team Lead and appropriate Team Members are assigned for each of five review teams based on subject matter or program expertise. The mandate for the team is to identify changes in standards and assure that the WSS Set remains both necessary and sufficient as the Laboratory safety envelope. The teams include:

- Environmental Protection – (Includes environmental regulations, hazardous waste transportation, hazardous waste management;
- Facilities – (includes facilities and infrastructure code, seismic, fire protection, and non-hazardous waste transportation);
- Radiation Protection;
- ES&H Management – (primarily DOE directives);
- Occupational Safety, Health, and Medicine.

6.4.3 *Non-DOE Standards*

Non-DOE Standards include:

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[3] Historically, the initial DOE Oakland WSS Change Management Process and the LBNL/BSO Integrated WSS Review and Update Process called for an annual review and update of the WSS Set to be responsive to the need for a formal change management system.

- Federal and state laws and codes (United States Code, Public Law, Code of Federal Regulations, California Code of Regulations, California Codes [Health and Safety, Public Resources, Water, Labor, etc.]);
- City and county rules, ordinances, local POTW ordinances, and municipal codes;
- Industry and organizational consensus standards (American National Standards Institute, National Fire Protection Association, American Society of Testing and Materials, American Conference of Governmental Industrial Hygienists, etc.).

6.4.4 *DOE Directives*

DOE directives primarily include:

- Manuals (DOE M ###), Notices (DOE N ###), Orders (DOE O ###), Policies (DOE P ###), Technical Standards (DOE STD ####);
- Unless independently nominated by LBNL, DOE directives are subject to incorporation in the WSS set under current contract clause H.18 (g) (see Section 8.1.2). Where appropriate, and in the best interest of LBNL, the tailoring process (see section 6.1) shall be applied by the Standards Review Team and the WSSC in the disposition of the directive or CRD.

6.5 Work and Hazards Review

Updates to the WSS Set due to changes in LBNL work and hazards are managed according to the process illustrated in Figure 2.

Work and Hazards Reviews are necessary to assure that work conducted at LBNL remains within the safety envelope defined by the WSS Set. The WHR is conducted at the division level. The WSSC may convene a WHR for each of the following reasons:

- Real Time – as a result of ISM and work planning efforts or during routine internal reviews of ongoing work on a cue that new work or new hazards not addressed by the WSS Set may have been identified;
- Periodic – as a component of a formal periodic WSS Review and Update. The periodic interval is determined by the LBNL and BSO WSSCs and the Steering and Advisory Committees.

Ongoing work that was planned and initiated within the framework of ISM and within the WSS Set safety envelope may have developed “scope creep”. The WHR provides checks and balances against such occurrence.

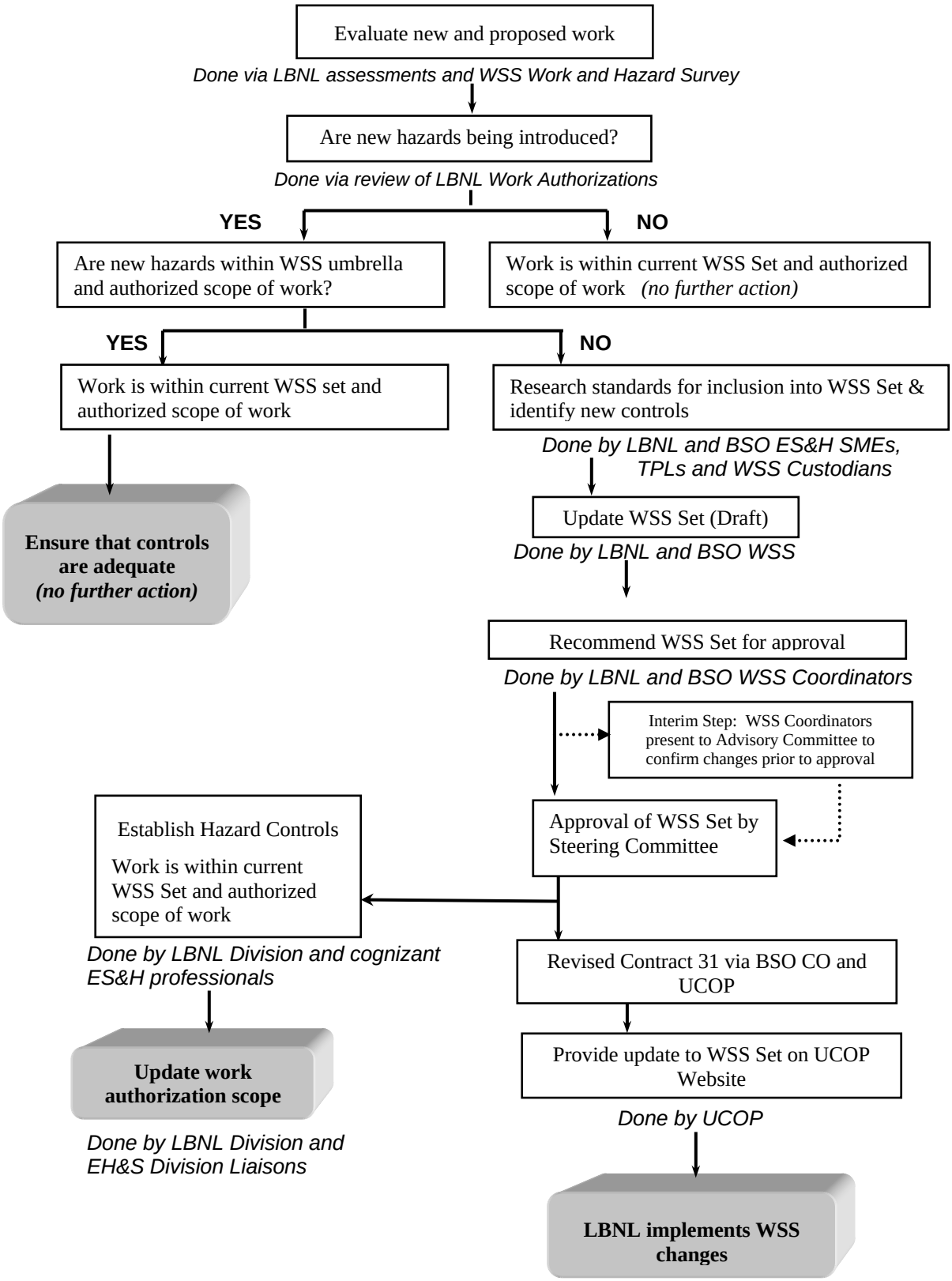
6.5.1 *Work and Hazards Review Triggers*

The following triggers can cause the WSSC to initiate a Work and Hazards Review:

- Determination by the WSSC, Steering or Advisory Committee that a periodic WHR is required;
- When work planning conducted under LBNL ISM identify work that may not be covered by the current WSS Set safety envelope, the WSSC is notified and convenes a WHR. A DSC, Liaison, PI, Line Manager or any

other employee can alert the WSSC of new work being undertaken that includes an ES&H component not addressed by the current WSS Set.

Figure 2 – WSS Change Management for Changes in Work and Hazards



Work and hazard review elements of Division Integrated Safety Management Plans and the annual Division Self-Assessment efforts contribute to the efficacy of the CMP WHR.

6.5.2 *Work and Hazards Review Teams*

The WHR is performed on a divisional basis. WHR Team members, at a minimum, include the WSSC and DSC, but may additionally include:

- PIs or Work Leaders;
- Liaisons, SMEs, or TPLs as necessary;
- Technical Assurance Specialists.

The WHR Team assesses whether current work conducted above line management level of authorization[4] is within the WSS Set safety envelope. When a periodic review is conducted, the WSSC distributes, and the DSC completes, the Work and Hazards Review Survey (see Appendix 1). The DSC or WSSC may request the assistance of PIs, Work Leaders, Liaisons, SMEs, or TPLs as necessary for verification of current work status.

If no new work or hazards not addressed by the current WSS Set are identified, LBNL ensures controls are in place for the current work and no additional action is necessary. If planned or proposed activities introduce new hazards that are not covered in the WSS Set, then the Team evaluates the hazard and recommends the appropriate change in the WSS Set. The WSSC notifies the Advisory and Steering Committees and obtains approval of the recommendation. Work may not be initiated until the proposed change is reflected in the WSS Set and is appropriately codified in institutional policy or procedure. If the WHR identifies work in progress not bounded by the WSS envelope, the work must stop until appropriate WSS content is identified and matriculated into the Set and properly codified where necessary.

Proposed change is submitted by the LBNL and BSO WSSC to the BSO Contracting Officer (CO). The BSO CO delivers the change to UCOP where change in the WSS Set is effected (See Figure 2 – WSS Change Management for Changes in Work and Hazards).

7 Implementation of WSS Changes

Changes to the WSS Set must be formally embedded in LBNL policy, procedure or other administrative program document and effectively incorporated into daily LBNL work. The WSSC assigns each WSS to a custodian responsible for monitoring changes in the standard and for assuring that each WSS is linked to LBNL work through specific policy, procedure or other administrative bridge.

---

[4] Work conducted under Line Management level of authorization is by definition work conducted within the WSS Set safety envelope (see PUB 3000, Chapter 6).

7.1 WSS Custodians

WSS Custodians (WSSCu) may include:

- Technical Program Leads;
- EH&S Division Group Leads
- Subject Matter Experts;
- Other LBNL professional staff and stakeholders.

If the WSSC receives a change recommendation relating to an existing WSS from a stakeholder other than the custodian, the WSSCu is notified. A Real-Time review may be convened. If the WSSC receives a change recommendation relating to a standard not currently in the WSS Set, the WSSC will make an appropriate custodian assignment and a Real-Time review may be convened. If change to the WSS Set results, the WSSCu is responsible for ensuring the change is reflected in LBNL policy, procedure, or other administratively bridging document.

7.2 Interface with Publication 3000 and other Lab Policies and Programs

Changes to WSS requirements must be documented or codified in LBNL policy, procedure or other administrative documents. The WSSC ensures institutional "flow down" through the process outlined in Figure 3 below.

8 Contract 31 Interface

The LBNL WSS Set is listed in Section J - Appendix I (List of Directives) to the UC/DOE Contract No. DE-AC02-05CH11231 (Contract 31) and therefore establishes binding safety envelope requirements. Changes to the WSS Set are changes to Contract 31.

8.1 Contract References

Web links to the specific contract sections that impact the WSS Set and the WSS CMP are:

8.1.1 *Part II, Section I, Clause I.86 – DEAR 970.5223-1*

Integration of Environment, Safety, and Health into Work Planning and Execution. Part II, Section I, Clause I.79 – DEAR 970.5204-2

Laws, Regulations and DOE Directives (*The Contractor will perform the work of this Contract in accordance with each of the Contractor Requirements Documents (CRDs) appended to this Contract as "Appendix I"*……).

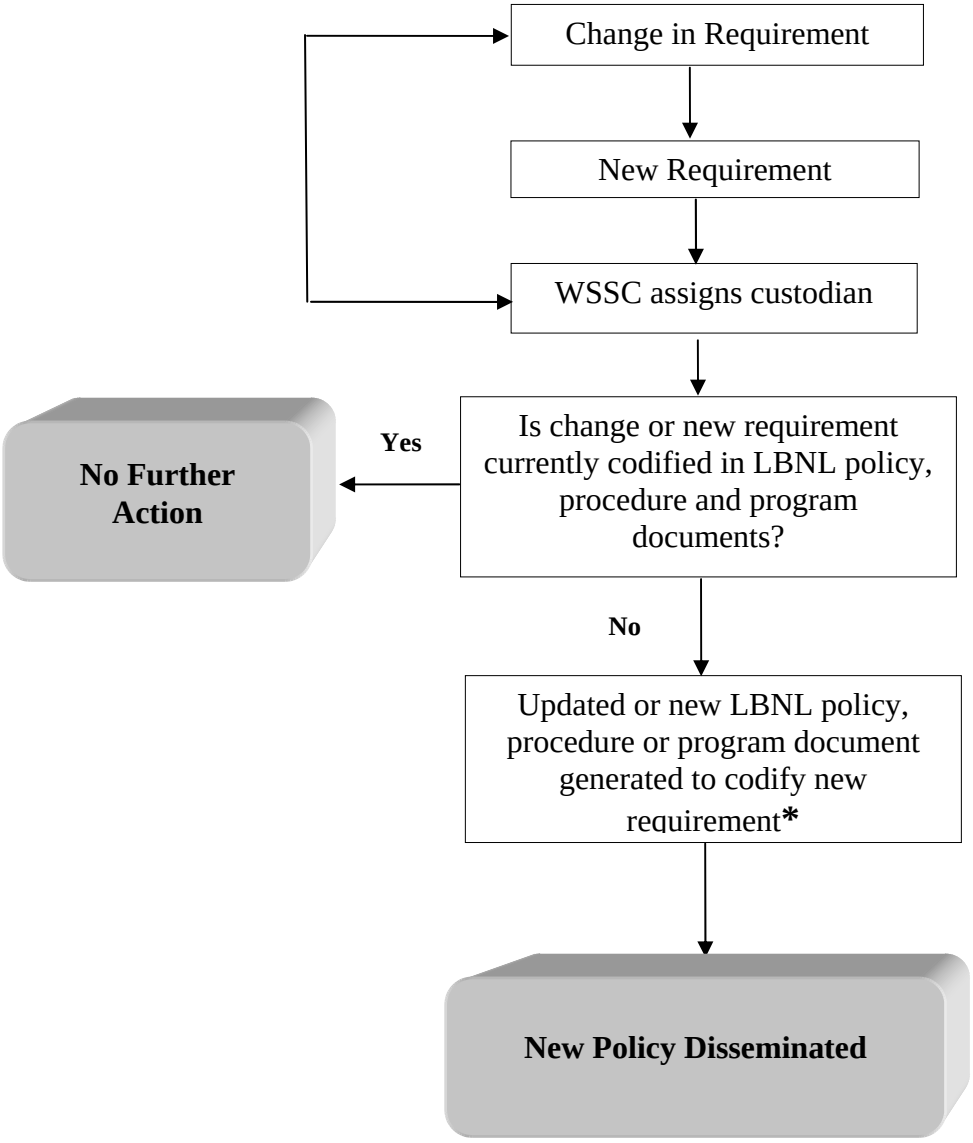
8.1.2 *Part I, Section H, Special Contact Requirements, Clause H.18*

Application of DOE Contractor Requirements Documents (This clause defines the process by which LBNL may propose alternatives to the DOE Directive CRDs and defines the process by which the BSO CO may add CRDs to Appendix I, and therefore, to the WSS Set).

8.2 Contracting Officer and Contract Update Protocol

Changes to Contract 31 must be made by DOE and UCOP contracting officers. Stakeholders nominate and submit WSS changes, through the WSSC, to the contracting officers.

Figure 3 – Codification of Work Smart Standards Changes



*Review and acceptance by SRC may be required

8.2.1 *DOE*

The DOE BSO CO is the point official for submittal of recommended changes to the WSS Set. With concurrence of the Advisory and Steering Committees, the WSSC submits WSS changes to the BSO CO.

8.2.2 *UCOP*

Upon approval of the submitted WSS Set changes, the BSO CO submits the recommended changes to the UCOP CO. The UCOP CO reflects the changes in the current official contract Appendix I, Work Smart Standards Set and updates the WSS Set posted on the UCOP web site.

9 Review and Process Improvement

In accordance with LBNL ISM, the WSS CMP is critically reviewed by the LBNL and BSO WSSCs at the conclusion of each periodic review and update cycle or as otherwise found necessary. The summary report for each review and update discusses specific process improvement, if identified, and defines the actions and responsible person(s) to effect such improvement.

10 Documentation

Work Smart Standards change management requires basis documentation for all change. WSS Change Management documentation with the corresponding principal owner noted in parentheses includes:

- Current WSS Set (UCOP CO);
- Periodic review and update summary report (WSSC);
- WHR Survey Form (WSSC, DSC);
- WSS – Custodian Key (WSSC);
- WSS recommended changes basis documentation (WSSCu, WSSC).

10.1 Hard Copy Files

The WSSC shall minimize and discourage hard copy format for WSS Change Management documentation. When hard copy format is the primary record, it shall be archived according to LBNL policy. The WSSC shall maintain a record of archived WSS materials.

10.2 Electronic Files

WSS Change Management documentation in electronic media format must be regularly backed up in accordance with LBNL policy. The WSSC shall maintain a record of electronic media WSS material.

11 Training Requirements

Training is provided to stakeholders commensurate with their role and affiliation with the WSS Set and the CMP.

11.1 All Stakeholders

General information on the WSS process and the current WSS Set may be accessed on the LBNL Necessary and Sufficient Work Smart Standards website by any stakeholder.

11.2 Key Stakeholders

Key LBNL stakeholders must receive training that provides awareness of the WSS Set, the CMP, and their individual roles and responsibilities with respect to the WSS Set. Key LBNL stakeholders include:

- WSS Steering Committee;
- WSS Advisory Committee;
- EH&S Division and allied division SMEs and TPLs;
- Division Safety Coordinators;
- Division Liaisons;
- Principal Investigators;
- Work Leaders;
- Safety Review Committee.

The level and content of the training will be determined by the WSSC at the time the stakeholders' participation in the WSS CMP is initiated.

11.3 Review Teams

In addition to Key Stakeholder training, WSS Review Team Leads and Team Members and WHR Team Members receive specific instruction from the WSSC on the following:

- Specific expectations of the WSS Standards Review Team (time frame, reporting, etc.);
- Detailed instructions on which standards are to be reviewed by which teams;
- How division work is assessed to arrive at WSS safety envelope compliance determination;
- Specific documentation requirements in support of recommended WSS Set changes;
- Specific information requirements when identifying new standards that assists the WSSC in assignment of a proper WSSCu;
- How to write the WSS Review and Update summary report (standardized format provided to Team Leads by WSSC).

12 References

Website

LBNL Necessary and Sufficient Work Smart Standards Website

Contract Clauses

See Section 8.1 - Contract References

DOE Directives

DOE P 450.3 (Policy, 01/25/1996, HS) Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management

DOE Manual 450.3-1, The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards

DOE Guide 450.3-1 (Guide, 02/01/1997, HS) Documentation for Work Smart Standards Applications: Characteristics and Considerations

13 Acronyms and Definitions

Acronyms and Definitions cited in the procedure.

13.1 Acronyms

ANSI	American National Standards Institute
ASTM	American Society for Testing and Material
BSO	Berkeley Site Office
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CMP	Change Management Process
CO	Contracting Officer
CRD	Contractor Requirements Document
DL	EH&S Division Liaison
DOE	United States Department of Energy
DSC	Division Safety Coordinator
EH&S	Environment, Health and Safety (Division)
ES&H	Environment, Safety and Health (subject and policy)
HAZMAT	Hazardous Material
JHA	Job Hazard Analysis
JHQ	Job Hazard Questionnaire
Lab	Orlando E. Lawrence Berkeley National Laboratory
LBNL	Orlando E. Lawrence Berkeley National Laboratory
PI	Principal Investigator
PUB3000	Publication 3000 (LBNL ES&H Policy Manual)
SME	Subject Matter Expert
SOP	Standard Operating Procedure
TP	Technical Program
TPL	Technical Program Lead
UC	University of California
UCOP	University of California, Office of the President
USC	United States Code
WGL	Work Group Leader
WHR	Work and Hazard Review
WSS	Work Smart Standards
WSSC	Work Smart Standards Coordinator
WSSCu	Work Smart Standard Custodian

13.2 Definitions

Change – As pertaining to *Change Management*;

Contract 31 (UC/DOE) – The legal document in which the WSS Set resides (cited in Appendix I to Contract 31), unto which the WSS Set requirements become binding;

Custodian – A Technical Program Lead, Subject Matter Expert, or other LBNL professional or defined group to whom to each WSS is assigned;

DOE Directives – DOE Manuals, Notices, Orders, Policies or Technical Standards (see Section 6.4.4);

Industrial Standard – A standard, not necessarily codified by state, federal, or local agency, but by consensus, an accepted and documented standard or best management practice authored and promoted by industry, professional, and trade organizations;

Necessary Standard – Standards for which compliance is required;

Stakeholder – Laboratory employees and guests, BSO staff and guests, and the public who visit or live in the Lab community;

Subject Matter Expert – Lab professional staff that serve as the ultimate source of technical or regulatory authority for a designated subject. A list of ES&H SMEs is provided on the "Who to Call" selection on the EH&S Division web site directory. Some WSS-related SMEs may reside in disciplines closely aligned with, but residing outside of the EH&S Division. Examples of SME disciplines are asbestos, biosafety, respiratory protection, and machine guarding;

Sufficient Standard – Standards that may not be required as statute, but that are considered to additionally define safety and operational envelope parameters that enable adequate protection of employees, the public, and the environment;

Technical Program Lead – A Technical Program Lead is the point-of-contact for a major ES&H (or closely allied discipline represented by another Lab division) category program area. A technical program may encompass multiple SME discipline subjects. Examples of Technical Programs are environmental protection, radiation protection, DOT transportation, and industrial hygiene;

Work Smart Standards Set – The collection of ES&H standards uniquely identified through the DOE Necessary and Sufficient Process that defines the safety envelope bounding the work conducted at LBNL. The WSS Set is a single line item of Appendix I of the UC/DOE Contract 31.

Appendix 1 — Work and Hazard Review Survey

LBNL Work Smart Standards
Periodic Review
Work and Hazards Review Survey

Section I - *Questions*		
Division:	**Date:**	
Division Safety Coordinator:		
1. Have new hazards been introduced through your Division's work activities? (**If 'No", go to page 2, sign form and forward to FPR. If 'Yes', describe new hazard on page 2 and continue to question 2**)	**Yes** ☐	**No** ☐
2. Are new hazards covered by the current WSS Set? (**If 'No", describe what hazard/part of the hazard the WSS Set does not cover. If UNSURE, contact the appropriate EH&S Subject Matter Expert and resolve before completing this survey**)	**Yes** ☐	**No** ☐
3. Does the new hazard involve work off the lab site? (**If "Yes", check location below and describe the nature of the work in Section II, Box 3**)	**Yes** ☐	**No** ☐
Calvin Lab ☐ **Donner Lab** ☐ **Other UCB Campus Space** ☐ **Potter Street** ☐ **OSF** ☐ **Downtown Berkeley** ☐ **Other DOE Lab** ☐ **Other Non-DOE Within US?** ☐ **International Location?** ☐		
4. Are the Division's work and associated work hazards adequately covered by the current Work Smart Standards Set?		
Yes ☐	**No** ☐ **(Explain on page 2)**	

Please proceed to Section II after completing this page.

Section II – Explanations, Comments, and Feedback	
Question	Explanation or Comment **(Use space with # that corresponds to question on page 1)**
1	
2	
3	
4	

Completed by:

Print Name | Signature | *Date*

Liaison Review by:

Print Name | Signature | *Date*

Reviewed by:

LBNL WSSC | *Date*