

Southwest Division  
Naval Facilities Engineering Command  
Contracts Department  
1220 Pacific Highway, Rm. 135  
San Diego, California 92132-5187

Contract No. N68711-92-D-4670

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY  
NAVY CLEAN II**

**PROGRAM  
HEALTH AND SAFETY PLAN**

Revision 0

Prepared by:

Bechtel National, Inc.  
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January 7, 1994

Signature:

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Date:

*7 Jan 94*

Signature:

*J.A. Moe*  
J.A. Moe, Program Manager

Date:

*1-7-94*

# Bechtel

## Interoffice Memorandum

To: R. W. Fisher

Subject: Health and Safety Program

File: IOM PMO-0633

Date: January 12, 1994

From: C. I. Sherman *CS*

Of: Navy CLEAN Health and Safety

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Attached for your information and use is a copy of the approved CLEAN II Program Health and Safety Plan. This document establishes CLEAN II Program health and safety policies for all field activity.





BECHTEL NATIONAL INC.

CLEAN II TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-92-D-4670 Document Control No. PMO-0633

TO: Doris Wilson
Contracting Officer
Contracts Dept. Room 135
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA. 92132-5187

DATE: January 7, 1993

CTO#:

FROM: J. A. Moe, Program Manager

J. Kluesener, Operations Manager

DESCRIPTION: CLEAN II Program Health and Safety Plan

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# Bechtel

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CLEAN II Program  
Bechtel Job No. 22214  
Contract No. N68711-92-4670  
File Code: 13013

**IN REPLY REFERENCE PMO- 0633**

7 January, 1994

Department of the Navy  
Southwest Division  
Naval Facilities Engineering Command  
1220 Pacific Highway  
San Diego, CA 92132-5187

Attention: Ms. Doris Wilson  
Contract Administrator

Subject: CLEAN II Program Health and Safety Plan

Dear Ms. Wilson

Attached herewith for your information and potential comments are three copies of the CLEAN II Program Health and Safety Plan. This plan has been prepared to meet the requirements for an accident prevention plan as specified by U. S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, Section 01.A.07, which is incorporated in FAR clause 52.236-13, Accident Prevention (NOV 1991).

We felt that your staff would be interested in reviewing and commenting on this document. A generic site specific health and safety plan and implementing procedures, supplementing the Program Health and Safety Plan will be submitted within the next two weeks, for your review and comment.

If you have any questions regarding this document, please contact our Health and Safety Manager at (619) 687-8711, or me at (619) 687-8710.

Very Truly Yours,

  
J. A. Moe  
Program Manager

JAM/CIS/cis

cc: R. K. Barksdale

Attachments as stated.



**Bechtel National, Inc.** Systems Engineers-Constructors

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## **EXECUTIVE SUMMARY**

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### **PROGRAM HEALTH AND SAFETY PLAN FOR CLEAN II**

This Program Health and Safety Plan (PHSP) has been prepared for use by Bechtel National, Inc. (Bechtel), in support of Program management and technical environmental services for the Naval Facilities Engineering Command Southwest Division (SWDIV) execution of the Comprehensive Long-Term Environmental Action Navy - II (CLEAN II) Program.

This PHSP describes how Bechtel will implement the Health and Safety Policies contained in Bechtel Corporate Policy 111, "Safety and Health," the applicable Occupational Safety and Health regulations, and SWDIV requirements. The plan also describes how these Program requirements are translated into site-specific requirements for implementing the CLEAN II Health and Safety Program at various facilities. Supplemental documents to this Program are the CLEAN II Program Procedures (PP) and Standard Operating Procedures (SOPs) for Health and Safety.

This PHSP has been reviewed and approved by the Program Manager (PGM), Operations Manager (OM), and the Program Health and Safety Manager (HSM). The PHSP is being submitted to the Navy SWDIV and to Bechtel Corporate Safety and Health Services for concurrence.

This plan provides the framework, philosophy, policy, Program requirements, and regulatory basis for the comprehensive Health and Safety Program for tasks presently anticipated within the scope of the CLEAN II Program. This PHSP shall be incorporated by reference into appropriate Program documents that pertain to Program activity which may affect Health and Safety.

Use of the term "Team" subcontractors refers to Brown and Caldwell (BC) and Kleinfelder (K) employees; the term "Other Subcontractors" refers to subcontractors of Bechtel.

Each copy of this document is issued under controlled distribution. Uncontrolled copies shall be marked "uncontrolled" before release.

## Section 1

# **PROGRAM HEALTH AND SAFETY PLAN**

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## **1.1 PROGRAM HEALTH AND SAFETY PLAN**

The Southwest Division, Naval Facilities Engineering Command (SWDIV), in San Diego, California, has contracted with Bechtel for execution of the Comprehensive Long-Term Environmental Action Navy - II (CLEAN II) Program, for southern California, Arizona, and New Mexico. Bechtel National, Inc. (Bechtel), has established this Program Health and Safety Plan (PHSP) to provide a basis for maintenance of a work environment that does not compromise the health or safety of Program participants, activity personnel, or the public. The plan also describes the organization and basis documents utilized to assure compliance The Southwest Division, Naval Facilities Engineering Command (SWDIV), in San Diego, with applicable federal, state, and local requirements for health and safety.

## **1.2 PURPOSE**

The purpose of this plan is to identify the CLEAN II Program health and safety requirements, to present CLEAN II health and safety philosophy, and to define the relationship of the CLEAN II Health and Safety Program and organization to the SWDIV, Team subcontractors, and other subcontractors of any tier.

This plan provides the following functions:

- identifies the project, scope of work, and types of tasks to be performed;
- identifies potential hazards;
- identifies personnel protection requirements and safe working procedures;
- identifies reference documents that form the complete Health and Safety Program;
- establishes medical-monitoring and site-control programs;
- establishes workplace surveillance and atmospheric monitoring requirements;  
and
- establishes contingency planning requirements.

This CLEAN II Health and Safety Program Plan implements the Occupational Safety and Health Administration (OSHA) requirement that each employer develop and maintain a written Health and Safety Program for its employees involved in hazardous waste operations.

## Section 1 Program Health and Safety Plan

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### 1.3 PHILOSOPHY AND POLICY

As a policy, the Department of the Navy, the Naval Facilities Engineering Command, and associated environmental restoration contractors are committed to excellence in work execution and safety performance. The CLEAN II Program Health and Safety Policy is depicted in Figure 1-1.

### 1.4 BECHTEL CORPORATE SAFETY AND HEALTH PROGRAM

The Bechtel Corporate Policy 111: SAFETY AND HEALTH sets forth the Bechtel corporate commitment to Safety Excellence. The policy states that Bechtel is dedicated to the concept that all accidents are preventable. Accordingly, the company is committed to achieving and sustaining "zero accidents" performance through continuous improvement practices.

In support of Bechtel's mandate for Safety Excellence, the corporate Safety and Health Services organization supports all Bechtel operations, including the CLEAN II Program, with staffing and a comprehensive program designed to meet the following objectives:

- provide a safe and healthful working environment for all employees;
- focus on eliminating occupational injuries and illnesses by implementing cost-effective safety and health programs;
- promote a constant commitment to achieving and improving safety and health excellence throughout the Bechtel organization;
- sustain a leadership position in the construction industry safety and health field;
- implement programs to eliminate losses to equipment and/or property; and

## Section 1 Program Health and Safety Plan

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- implement programs that increase the quality of our services and products through safety excellence.

### 1.5 SPECIFIC REQUIREMENTS

This plan has been prepared in order to meet the specific OSHA requirements established for Hazardous Waste Operations and Emergency Response programs, SWDIV and other Navy requirements, and Bechtel requirements, including the following documents:

- Safety and Health Requirements Manual, EM 385-1-1, Rev. 1992 , US Army Corps of Engineers;
- Navy/Marine Corps Installation Restoration Manual;
- Federal Hazardous Waste Operations and Emergency Response, Title 29 CFR 1910.120;
- specific state general industry and construction industry occupational safety and health standards;
- specific industry consensus standards that include American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and Safety Equipment Institute (SEI);
- Naval Facilities Engineering Command (NFEC), Environmental Contract Quality Management Guide, P-1071, December 1992;
- Bechtel Safety and Health Manual, V. 1 (Safety Services) & V. 2 (Health Services); and
- American Conference of Governmental Industrial Hygienists, Threshold Limit Values.®

This list, and any future amendments, comprise the "Program Basis Documents." A complete list and copy of all authorized basis documents will be maintained by the HSM. The Health and Safety Manager (HSM) will obtain SWDIV concurrence before incorporating specific additional consensus standards, industry or government guidance documents, or other good practices into the Program.

## Section 1 Program Health and Safety Plan

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### 1.6 STATE REQUIREMENTS

Within the states, worker occupational health and safety protection and worker rights are provided by state programs under the oversight of the federal OSHA. Each state within the SWDIV region has developed an approved state plan pursuant to the Federal Occupational Safety and Health Act. The CLEAN II Program is based upon federal standards; where state requirements are more stringent, these requirements are incorporated into site-specific health and safety plans (SHSP).

The California Department of Industrial Relations, Division of Occupational Safety and Health, maintains the state program in California. California regulations are found in Title 8, California Code of Regulations (8 CCR) and in the California Health And Safety Code.

Arizona has adopted the federal OSHA regulations found in Title 29, Code of Federal Regulations (29 CFR).

The New Mexico Environment Department, Occupational Health and Safety Bureau, has adopted the federal regulations in 29 CFR with some state amendments.

### 1.7 REFERENCE DOCUMENTS

This plan is not complete and will not be used for work execution without the following reference documents being made available to the reader and being maintained on-site during work execution:

- The work plan for the task to be performed;
- The site-specific health and safety plan and supplements;
- The applicable CLEAN II Health and Safety Standard Operating Procedures (SOPs); and
- The applicable CLEAN II Health and Safety Program Procedures.

### 1.8 HEALTH AND SAFETY DEPARTMENT ROLE

The Program Health and Safety staff serves in two major roles on the CLEAN II Program. The Department provides a variety of functional and technical safety services to the Program for Contract Task Order (CTO) field activities. The following roles will be incorporated into responsibility statements for each health and safety staff position category:

## Section 1 Program Health and Safety Plan

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- advising Program Management, Project Managers (PM), and CTO Leaders (CTOLs) on health and safety matters;
- preparing site-specific Health and Safety Plans and amendments;
- providing area, personal, and environmental air monitoring;
- verifying and certifying that equipment is decontaminated;
- providing health and safety orientations for new Program/site employees;
- investigating incidents, accidents, and injuries;
- establishing site-control measures and posting requirements;
- implementing the Hazardous Work Permit Program and assuring that appropriate personal protective equipment (PPE) is utilized at all times;
- specifying PPE, respirators, and safety supplies; and issuing certain individually assigned items such as safety glasses, boots, hard hats, respirators, and first aid kits;
- providing emergency planning and emergency response capability to field operations; and
- providing medical and training status reports.

The staff also performs in a quasi-quality assurance role with respect to implementing of health and safety requirements of the Program. Functions provided by the Department in this category include:

- verifying that subcontractor personnel meet medical, training, and experience requirements;
- verifying that subcontractor Health and Safety Program documents meet Program standards;
- verifying that field personnel comply with safe-work rules;
- verifying that subcontractors implement their Health and Safety Programs;
- providing authority to stop any work task if conditions become unsafe or if field personnel do not implement Program requirements; and
- verifying that environmental regulatory compliance with respect to operations and waste generation is maintained at all times.

The staff has an independent reporting chain-of-command with respect to health and safety compliance.

**Section 1 Program Health and Safety Plan**

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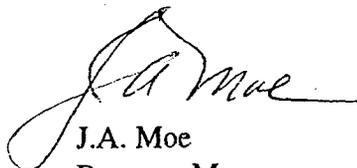
**FIGURE 1-1**

**CLEAN II STATEMENT OF HEALTH AND SAFETY POLICY**

Working as a team, all Navy CLEAN II participants will give the health, safety, and well being of CLEAN II employees, subcontractor employees, customer personnel, and the public priority consideration during the planning and execution of Program work. In fulfilling this commitment, we will:

- take all practical steps to safeguard our employees, subcontractor employees, customer personnel, visitors, or the public from injury or illness by maintaining an effective health and safety organization at all times;
- continually reaffirm that no job is so important and no request is so urgent that we cannot take time to perform our work safely;
- assure that all employees are provided with the proper safety equipment and training and require employees to effectively use the safety equipment provided and to observe Bechtel health and safety performance standards;
- maintain an aggressive management commitment to the elimination of any foreseeable hazards that may result in loss to personnel, property, or process by providing effective and responsible planning and supervision that emphasizes health and safety considerations;
- meet, if not exceed, the compliance requirements of all laws governing employee and environmental health and safety,
- understand that control of loss to personnel, property, or process is the responsibility of all management and employees alike; and
- for ourselves and the activities we control, individually accept responsibility for the Health and Safety Program effectiveness.

Each of us will embrace these commitments to loss prevention, regulatory compliance, and health and safety excellence as a way of life, both on and off of this Program.

  
J.A. Moe  
Program Manager

## Section 2

# **PROGRAM REQUIREMENTS**

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The CLEAN II Program mission is to provide quality services to support the Navy in: expediting hazardous and toxic waste site cleanup, providing emergency response to operational incidents; and achieving regulatory compliance within SWDIV activities. The CLEAN II Health and Safety Program is an integral part of providing these services. In support of the Program, Bechtel will develop plans and procedures to assure that health and safety issues are assessed early, their cost and schedule impact are minimized, and that regulatory compliance requirements are satisfied or exceeded.

## **2.1 TYPES OF TASKS ASSIGNED**

The CLEAN II Program comprises several areas that are each subject to a unique regulatory framework which varies from state to state, and in some cases regionally. Each of the main Program areas will require a unique approach to the CLEAN II Health and Safety Program implementation.

### **2.1.1 Installation Restoration Program**

Installation restoration includes various field assessments, remedial investigations, feasibility studies and facility construction activities. These tasks require SHSP developed with particular attention to the individual site characteristics.

### **2.1.2 Underground Storage Tank Program**

Assessment and planning for removal of underground storage tanks (USTs) are generally subject to requirements similar to those for Installation Restoration. UST work is expected to be limited principally to petroleum products storage, which permits a standardized health and safety approach.

### **2.1.3 Asbestos Abatement Program**

Asbestos evaluations, studies, and abatement are subject to unique OSHA and U.S. Environmental Protection Agency (EPA) requirements. Work in asbestos-regulated areas requires that some employees be trained and certified to different and more rigorous standards than installation restoration or UST workers. A separate health and safety support approach will be taken with this work.

## **Section 2 Program Requirements**

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### **2.1.4 Emergency-Response Support Services**

Emergency-response support requires perhaps the most varied, and at the same time, specialized capabilities. Emergency-response health and safety is regulated under the same provisions as installation restoration work; however, plans prepared for site investigation and restoration are not suitable for emergency response. Emergency response contractors will have preapproved Health and Safety Plans suitable for a wide range of emergency-response situations.

## **2.2 ADDITIONAL TASKS**

Additional tasks within the scope of the Program that have health and safety requirements may include:

- polychlorinated biphenyl (PCB) management,
- air pollution assessment and management,
- hazardous substance contingency planning, and
- radiological assessments.

Plans, Program Procedures (PPs), and SOPs will be developed as these and other additional elements are tasked.

## **2.3 PROGRAM PLANS**

An SHSP will be developed, encompassing a wide range of tasks and anticipated hazards associated with Program operations.

### **2.3.1 Site Health and Safety Plan Supplements**

Site-specific supplements are prepared to meet OSHA requirements for work on sites within the scope of the Hazardous Waste Operations and Emergency Response Standard. Site-specific supplements and the arrangement of site-specific plans will be consistent throughout this Program. The content and arrangement is specified in Section 22 of this Program Plan. The SHSP and supplement will comprise the plan for a specific task, group of tasks, or CTO.

## **Section 2 Program Requirements**

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### **2.4 PROGRAM PROCEDURES**

PPs are prepared to describe and provide implementing guidance on health and safety matters that are best addressed on a programmatic basis. PPs will be used to set forth the method of implementation of programmatic health and safety requirements, particularly those with nonoperational elements. Examples of PPs for safety and health include the following:

- Medical Records Management,
- Medical Surveillance Program,
- Hearing Conservation Program, and
- Health and Safety Training Program.

PPs are based on the established Bechtel Safety and Health Procedures Manual and will be prepared to reflect the requirements of this Program.

### **2.5 STANDARD OPERATING PROCEDURES**

SOPs are prepared to provide instruction on performance of health and safety tasks. SOPs establish a uniform methodology Program-wide to perform a particular task. Site-specific Health and Safety Plans will reference SOPs for standard practices. SOPs will be used to provide instruction on operational tasks for health and safety. Examples of SOPs for health and safety include the following:

- air surveillance instrument calibration,
- air surveillance instrument operating procedure,
- respirator maintenance procedure,
- decontamination protocol, and
- site-specific health and safety orientation.

A basic set of SOPs will be prepared initially to support general tasks. Additional SOPs will be prepared as required for specialized work.

## **Section 2 Program Requirements**

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### **2.6 TRAINING PLAN**

A Health and Safety Training Plan will be prepared to identify resources available to accomplish the training at minimal cost to the Program. The training plan will also identify the types of training required for Project personnel. It also will identify company, team subcontractor, government, and commercial training resources available in the local area as well as minimum standards for training providers used by the Program.

### **2.7 INSPECTION AND OVERSIGHT PLAN**

The Inspection and Oversight Plan will specify the means and methods of accomplishing regular and frequent inspections required by Program-basis documents. The health and safety oversight process is independent of the Program Quality Assurance function, and it serves to provide an in-depth and ongoing review of all health and safety activities.

### **2.8 PROGRAM POLICIES**

Program policies are established to implement Bechtel's commitment to excellence in health and safety. The basic Program polices established are described below.

#### **2.8.1 Program Safety and Health Mandate**

Each Program task shall be executed by personnel in a manner consistent with the Program Health and Safety Policy. Program work shall be planned and accomplished in a manner that provides a work environment which will not compromise the health or safety of any individual associated with the work conducted, activity personnel, or the public. The program will consider health and safety as the first priority in planning and executing work. The program will strive to eliminate all occupational illness and injury.

#### **2.8.2 As Low as Reasonably Achievable**

The Program policy is to maintain exposures to hazardous chemical, physical, or biological agents at levels that are as low as reasonably achievable (ALARA). ALARA is achieved through proper training of employees, adequate work procedures, adequate engineering controls, proper personal hygiene practices, and use of protective equipment. Each individual working in a controlled area is required to adhere to established ALARA policies. The ALARA policy will be considered in the development of work plans and health and safety plans. The ALARA Program concept does not mandate zero or undetectable exposures; rather, ALARA is a conceptual philosophy for minimizing

## **Section 2 Program Requirements**

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exposure considering the nature of work, practicality of control measures, and the hazard or risk from a particular agent considering exposure levels, exposure times, and other relevant factors.

### **2.8.3 Stop-Work Policy**

The site health and safety officer has the authority to stop any aspect of field activity that is not in substantial compliance with Program requirements, or otherwise represents a risk of significant health effects or exposure to unsafe conditions. The Navy may stop work at any time for unsafe conditions.

### **2.8.4 Carcinogen Exposure Policy**

The Program policy is to identify in the SHSP, when their presence becomes known or suspected on-site, chemicals that are recognized as confirmed human carcinogens or suspect human carcinogens by the principal authoritative bodies, the American Conference of Governmental Industrial Hygienists (ACGIH), the National Institute of Occupational Safety and Health (NIOSH), the International Agency for Research on Cancer (IARC), and the National Toxicology Program (NTP). Exposure by any route to recognized human carcinogens without published exposure limits shall be maintained at the absolute practicable minimum level.

### **2.8.5 Buddy System Policy**

The Program policy is to assign workers in groups of two for work of a hazardous nature, or whenever workers may become isolated. The buddy system is a safety practice in which each individual is concerned with the health and well-being of their buddy. The buddy system will be implemented during on-site activities in Level A or Level B protection, and as determined necessary by the Health and Safety Supervisor (HSS) for other activities. The buddy system will always be implemented for emergency activities whenever the emergency plan has been activated.

### **2.8.6 Effective Means of Communication**

The Program policy is to establish effective means of communication for requesting medical and other emergency-response services. Effective means of communication include temporary land lines, mobile telephones, radios, marine radios, or special systems

## **Section 2 Program Requirements**

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(VHF-SSB, trunked commercial service, Navy services) in remote areas. Standard commercial two-way radios will typically be used for intraproject communications at field sites.

### **2.8.7 Emergency Medical Services**

The Program policy is to assure prompt and effective means of providing adequate medical facilities that are available at all times for project employees. Prior to field work of a potentially hazardous nature, and for all field work in remote areas, emergency medical facilities, transporters, travel routes and communications will be in place.

## **2.9 COMMITMENT FOR CONTINUOUS IMPROVEMENT**

Health and safety staff will execute their work in partnership with other Program personnel with a critical awareness focusing on process improvement: how better Program implementation can be achieved; how activities can be carried out more efficiently; or how we can attain our work objective in a more productive manner.

### **2.9.1 Commitment to Continuous Improvement (CCI) Program Mission Statement**

The Health and Safety CCI Mission is to prevent injuries, illnesses, and damage to equipment and property through sustained dedication to health and safety excellence and to provide quality health and safety services to the Program by developing and executing cost-effective, site-specific Health and Safety Plans. The health and safety staff will constantly strive to strengthen and improve the Program's health and safety performance in the field and in its offices as well as to promote and enhance across-the-board employee and management involvement and ownership of the Health and Safety Program.

### **2.9.2 Specific CCI Activities**

The following are typical CCI activities that may be implemented on the Project:

- An annual review of CCI activities will be conducted.
- Managers and supervisors will strive to improve Health and Safety Program implementation.
- CCI review will be incorporated in annual PP and SOP reviews.

## Section 2 Program Requirements

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### 2.10 QUALITY ASSURANCE FOR SAFETY AND HEALTH

Health and Safety functions and activities will be subject to Quality Assurance (QA) oversight to the same extent as other support elements of the Program. The Health and Safety Department will strive to assure quality principally through inspections, internal peer reviews, and oversight visits of operational activities. The Quality Manager will provide an independent evaluation of Program performance on an annual basis.

### 2.11 INJURY AND ILLNESS PREVENTION PROGRAM

This Program plan describes the measures necessary for compliance with 8 CCR 3203, Injury and Illness Prevention Program. Detailed measures are included in site-specific health and safety plans, PPs, and SOPs. The program includes the following elements:

- identification of authority and responsibility,
- compliance with safe and healthy work practices,
- communication of occupational health and safety matters,
- inspections of the workplace, and
- training and instruction of all employees.

## Section 3

# SCOPE AND OBJECTIVES

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This Navy CLEAN II Health and Safety Program Plan applies to all work performed by employees of Bechtel, Bechtel Team subcontractors, or other subcontractors of any tier performing field work for the Program. It specifically does not apply to office work environments of any subcontractor, vendors providing supplies or materials not delivered by its employees to the site, common carriers delivering material outside of controlled areas, or to subcontractor activities at their facilities. This plan does not apply to laboratories providing sample analysis, except to the extent that subcontract requirements incorporate special handling procedures for hazardous or toxic samples. This plan does not apply to armed services members or DoD civilian personnel, except to the extent that they will be requested to follow site requirements when within Program-controlled areas. This Plan is otherwise a Program document applicable to all Program work activity.

### 3.1 HEALTH AND SAFETY RESPONSIBILITIES

Health and Safety encompasses all measures, practices, techniques, and controls used to assure a safe and healthy work environment for Program personnel, site visitors, armed services members and DoD civilian employees, and the public. Any activities that may affect the foregoing are within the scope of health and safety procedures.

#### 3.1.1 Bechtel

Bechtel, as the Navy CLEAN II Prime Contractor, is responsible for administration of the requirements in this plan and for assuring compliance by Bechtel, Team Subcontractors, other subcontractors, vendors, and visitors. Bechtel is responsible for the health and safety of Bechtel personnel. Bechtel will provide a Program Health and Safety Orientation and a site-specific Health and Safety Orientation for all field employees; however, each subcontractor is responsible for assuring that all its personnel are thoroughly familiar with the requirements applicable to their task.

#### 3.1.2 Bechtel Team Subcontractors

Bechtel Team Subcontractor personnel working in any field capacity on the Program will implement the principles, philosophy, and requirements set forth herein. Team subcontractor personnel are trained in and meet the same Program Health and Safety requirements as Bechtel personnel while performing field work.

Each Team Subcontractor will maintain an independent comprehensive health and safety program consistent with its corporate requirements. These programs assure that the

## **Section 3 Scope and Objectives**

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individuals assigned to Program field activities have met all general health and safety requirements necessary under applicable OSHA regulations and Program requirements.

### **3.1.3 Other Subcontractors**

Other subcontractors shall be solely responsible for the health and safety of their employees while conducting work on the CLEAN II Program. Other subcontractors, shall be provided the CLEAN II Program Health and Safety Plan and applicable SHSPs. They shall be guided by the principles, philosophy, and requirements set forth in this plan. It shall be their responsibility to assure that their personnel are trained in the Program health and safety requirements before performing field work.

Each subcontractor will maintain an independent comprehensive health and safety program. Each subcontractor will establish as necessary, interfaces between its standard programs and the CLEAN II Program.

## **3.2 HEALTH AND SAFETY PERFORMANCE OBJECTIVES**

Traditional methods of measuring performance by compiling statistics are not necessarily true indicators of performance for environmental or hazardous materials programs. Since many of the potential health effects that may be experienced in the environmental field have delayed outcomes, other indicators of performance will be required for this Program.

These other indicators of safety performance will focus on elimination of unsafe acts that can lead to accidents. They will be established in addition to standard OSHA and ANSI statistical indicators. Independent audit by QA personnel will be included in the measure of performance. Standard inspection checklists, site reviews, QA site visits, and other reports will be considered in evaluating safety performance of each CTO.

### **3.2.1 Bechtel Personnel - Safety Performance**

The HSM will evaluate field implementation of the CLEAN II Health and Safety Program by performing regular and frequent inspections of all field sites. Each HSS will also perform support and oversight visits of assigned sites. Corporate evaluations or reviews may also be scheduled periodically.

## **Section 3 Scope and Objectives**

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The HSM will prepare an annual evaluation of safety performance, with employer and task breakdowns. These evaluations and any recommendations for necessary corrective actions will be submitted to the Program Manager.

### **3.2.2 Program Health and Safety Objectives**

The Program will establish objective measures for health and safety performance using objective criteria. Program objectives will apply across-the-board to all work performed on the Program. Individual CTOs may also establish safety objectives. The basic objective for CLEAN II work is zero accidents, zero injuries, and zero occupational illnesses for all Program personnel and activities.

### **3.2.3 Other Subcontractors**

Subcontractors will be required to submit experience-related information when bidding on Program work. Such data shall be critically considered during the procurement cycle for any solicitation in support of Program activity.

## Section 4

# **ORGANIZATION AND RESPONSIBILITIES**

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Program management and supervisory staff responsibility with respect to health and safety are described in this section.

## **4.1 PROGRAM AND TASK MANAGEMENT PERSONNEL**

Each level of management is responsible for the safety performance of subordinates. Each manager will include safety performance as a criterion in performance evaluations. The HSM will provide summary safety performance information and guidance in evaluating safety performance to managers.

## **4.2 BECHTEL CLEAN II PROGRAM MANAGER**

The Bechtel CLEAN II Program Manager (PGM) is ultimately responsible for, and has the authority to provide a Health and Safety Program that meets the level of effort necessary to support CLEAN II activities. The PGM is ultimately responsible to Bechtel senior management for CLEAN II Program safety performance and will hold Program personnel responsible for the safety performance of personnel at each level who ultimately report to him.

### **4.2.1 Bechtel CLEAN II Managers and Supervisors**

The CLEAN II managers and supervisors are responsible for assuring that the established Health and Safety Program is implemented in the planning and execution stages of all Program work. Every project manager, CTO leader and all supervisors are responsible for implementing the SHSP for activities for which they are responsible. Each manager and supervisor is responsible for the safety performance of their assigned projects. Each manager and supervisor is responsible for communication of safety performance expectations to subordinate employees. Each manager and supervisor will consider safety performance in the evaluation of subordinate employees.

## **4.3 HEALTH AND SAFETY STAFF QUALIFICATION AND TRAINING REQUIREMENTS**

The health and safety staff shall meet minimum training and experience requirements. These requirements are set forth below.

## **Section 4 Organization and Responsibilities**

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### **4.3.1 Program Health and Safety Manager**

The Program Health and Safety Manager is responsible for administration, technical support, and oversight of the CLEAN II Health and Safety Program. The HSM will be a health and safety professional with a bachelor's or master's degree in physical sciences or engineering, advanced training in industrial hygiene, and 10 years of professional experience in the field, at least two of which are in a field hazardous-waste-operations environment. The HSM will also be Certified in the Comprehensive Practice of Industrial Hygiene.

### **4.3.2 Bechtel CLEAN II Health and Safety Supervisor**

The Bechtel CLEAN II Program will be executed from the Project Execution Offices (PEOs) in San Diego and Norwalk, California. The Health and Safety Supervisor (HSS) in each Program office location will be responsible for providing operational field support and technical assistance to CTOs.

The HSS will be a health and safety professional with a bachelor's or master's degree in physical sciences or engineering, advanced training in industrial hygiene, and seven years of professional experience in the field, at least two of which are in a field hazardous-waste-operations environment.

### **4.3.3 Site Health and Safety Officer**

The Health and Safety Manager (HSM) will assign a Site Health and Safety Officer (SHSO) to each field task. The SHSO will be responsible for assuring that all Program personnel and subcontractors follow health and safety requirements and that the SHSP is implemented. The SHSO will perform routine air monitoring during field operations. The SHSO will be responsible for maintaining all required documentation and filing reports with the HSS.

The SHSO is a Bechtel National, Inc., employee who may be a Health and Safety Professional, an environmental scientist, or engineer. The SHSO will have suitable technical training, at least three years of experience performing environmental work similar in nature to assigned tasks, and at least one year serving at least part time in a health and safety role. The SHSO will also have completed the OSHA eight-hour hazardous-waste-operations training for supervisors, and Program health and safety training for SHSOs. The SHSO also will participate in ongoing Program training in SHSO duties, responsibilities, and equipment use, if not assigned to full-time health and safety duties.

## **Section 4 Organization and Responsibilities**

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The SHSO will be supported by the HSS, HSM, and specialist personnel as required.

### **4.3.4 Site Health and Safety Coordinator**

The Site Health and Safety Coordinator (SHSC) is a Bechtel National, Inc., employee responsible for implementation of the site-specific health and safety plan in the absence of the SHSO. The SHSC will have completed the the OSHA eight-hour hazardous-waste-operations training for supervisors and an orientation at the start of field work. The coordinator will be used at sites where a SHSO is not required.

## **4.4 RESPONSIBILITIES OF SUPERVISORS FOR HEALTH AND SAFETY**

Every supervisor is directly responsible for implementation of applicable Program requirements for work they control. All Program supervisors will be evaluated for health and safety performance in addition to other factors. All supervisors directly responsible for field work will receive OSHA eight-hour supervisor training.

## **4.5 HEALTH AND SAFETY ORGANIZATION**

### **4.5.1 Health and Safety Manager**

The HSM is independent of Program operations and reports directly to the PGM. The HSM reports functionally through the Corporate Health Services Manager to the Bechtel Vice Present for Safety and Health Services. The HSM is also accountable to the Bechtel Remediation Center Manager of Operations.

All Program health and safety staff report functionally through the HSM.

### **4.5.2 Health and Safety Supervisor**

The HSS is functionally independent of Program operations and reports to the HSM. The HSS provides day-to-day operational support for field activity and supports multiple project managers. The HSS provides all field support functions through assigned SHSOs. All SHSOs report and are accountable to the HSS for health and safety activities.

## **Section 4 Organization and Responsibilities**

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### **4.5.3 Site Health and Safety Officers**

The SHSO is typically an engineer or environmental specialist (geologist, hydrologist, environmental scientist, sampling specialist, etc.) with an interest in and qualifications for providing health and safety support, or an intermediate-level health and safety professional with collateral task responsibilities (waste management, water sampling, etc.). The individual designated as SHSO will consider the health and safety function primary while field assigned. An approved list of qualified SHSOs will be maintained by the HSM. Collateral-duty SHSOs will be required to participate in an ongoing qualification and training Program in addition to the basic required hazardous waste training and supervisor training. The HSM will determine which personnel are appropriate for a particular task and may require job coverage by Health Services staff based upon consideration of the potential hazard.

### **4.6 HEALTH AND SAFETY PROGRAM STAFF DEVELOPMENT**

The Program will provide ongoing training opportunities required to maintain the certification and credentials required by regulatory authorities.

## Section 5

# HAZARD ANALYSIS

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Preparation of site-specific health and safety plans will include a job-hazard analysis of tasks identified in the work plan. This analysis will be performed in order to identify the hazards that are likely to be present, and to develop appropriate compensatory and protective measures. This analysis will identify any monitoring and testing necessary to assure that a safe and healthful work environment is maintained. A summary of the assessment is presented in the SHSP.

### 5.1 CHEMICAL HAZARD ANALYSIS

The assessment will consider:

- chemicals present on site (maximum and average concentrations and media);
- toxicological properties (IDLH concentrations, acute effects, significant exposure routes, target organs for chronic effects);
- warning properties (odor, odor threshold), exposure-limit concentrations, or dose rates;
- flammability range; and
- reactivity and incompatibility.

For chemicals without exposure limits published by authoritative sources, the review shall utilize the National Institute of Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS), other NIOSH sources or EPA databases for toxicity information.

The hazards present on the site will be explained so a typical site worker can understand the risks and potential consequences of working on the project.

Methods for monitoring chemicals present (or an indicator subset) on-site, including instrument type or sampling method, will be described in SHSPs. Action levels for initiation of protection measures will also be provided and updated as the work environment is characterized. In the case of carcinogens, monitoring methods shall utilize best available technology, and action levels shall incorporate practicable conservatism with due consideration for duration of potential exposure.

## **Section 5 Hazard Analysis**

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### **5.2 BIOLOGICAL HAZARD ANALYSIS**

Biological monitoring for etiologic agents shall be evaluated and incorporated in the medical Program if the potential exposures warrant. Professional judgment of the medical provider and HSM will be relied upon where no standards are established. Etiologic agents of concern may include waterborne bacteria, molds and spores, and infectious waste materials.

Protective measures shall be identified for incorporation in the Health and Safety Plan. Prophylactic measures and additional surveillance recommended or approved by the Bechtel consulting occupational medical physician will be incorporated in the Health and Safety Plan.

If additional hazards not identified or addressed in SOPs, the HSS shall prepare a supplemental hazard assessment.

#### **5.2.1 Poisonous Plants, Animals, and Zoonosis Hazards**

The SHSO shall screen the area for these biological hazards during the initial site visit and shall discuss any problems with installation personnel during the prework review. Prior to entering remote areas, the HSS will contact the Navy and civilian public health officials to identify unique biological hazards. Multiple biological hazards are present at most sites. The most common hazards anticipated include rattlesnakes, insects, ticks, poisonous plants, vermin, marine life, and wild dogs.

### **5.3 PHYSICAL HAZARDS ANALYSIS**

The physical hazards associated with Program activity include noise; heavy equipment operation; falling, slipping, and tripping; manual lifting; heat stress; working over water; and fire or explosion hazards. Each physical hazard and assessment associated with site work will be described in the SHSP and site-specific supplements. These plans will provide additional information on protective and precautionary measures to be taken.

## Section 6

# SITE CONTROL

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A site-control Program will be established based on site-specific characteristics. Salient site-control requirements will be incorporated in SHSPs.

Control procedures are established in accordance with the following considerations:

- potential hazards (chemical/biological/physical);
- terrain;
- weather conditions; and
- site characterization (remedial activities).

### 6.1 HAZARDOUS WORK PERMIT

Hazardous work permits (HWPs) are prepared for site tasks based on the requirements established in the SHSP. HWPs are generally prepared for activities having potential contact with or exposure to hazardous substances, physical agents, biological hazards, or safety hazards. HWPs will be initially approved by the HSS. Modifications requiring more protection will be issued by the SHSO based upon changing site conditions; modifications that are less protective will be approved by the HSS. The operations supervisor responsible for the work (CTOL, PM, etc.) will also approve the HWP. Depending on the installation, a facility representative may be required to provide written authorization to proceed, after all clearances are completed. HWPs are posted or readily available to all site workers. The HWP provides documentation of the specific protective ensemble and other precautionary means used at a particular time. Normally, the HWP will address the following:

- exposure-monitoring requirements;
- respiratory protection;
- PPE and clothing;
- compliance with rules regarding prohibited activities;
- special decontamination procedures, hygiene facilities, and practices; and
- employee information and training.

Emergency responses where serious impacts could result if time were taken for HWP preparation and approval are not covered by the HWP requirement.

## Section 6 Site Control

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### 6.2 SITE WORK AUTHORIZATION

The approved HWP provides a general authorization to work. A list of authorized HWP approvers will be maintained by the HSM.

### 6.3 CONTROLLED AREA ACCESS

Access to work areas will be facilitated through a system of controlled-access areas and site-access controls, which will be described in SHSPs.

All areas to which access is controlled by the Program are identified as controlled areas. Within controlled areas are the usual contamination-reduction zone and exclusion zones. Areas requiring special-access controls where access is restricted due to security, radiological, unexploded ordinance or other special concerns as described below are termed restricted areas. Each SHSP will describe the area access provisions to be established and maintained for work. Typical means that may be employed on the Project include:

- an access-control register, which will be maintained at the controlled area boundary to record the number and identity of individuals in the area;
- requiring all personnel to sign the access control log before entering the controlled areas and each time upon leaving; and
- requiring that personnel or equipment enter or leave through the site-access control point.

### 6.4 INSTALLATION ACCESS

Installation access and security requirements will be included in SHSPs.

### 6.5 VISITOR ACCESS

Visitor access will be limited to essential visitors. Normally visitors will not be permitted within controlled areas unless they are going to perform essential duties.

## Section 6 Site Control

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### 6.6 RESTRICTED WORK AREAS

Restricted work areas are areas requiring special-access control beyond the controlled-area boundary. These areas will be established to control access and operations in locations where exposure to hazardous material above guidelines can occur. Special features and boundaries will be incorporated in the design of a restricted work area based on the level of contamination and/or potential for exposure. Restricted work areas may be controlled by guards, administrative controls, locks, or a combination of these methods.

### 6.7 SITE RECORDS

#### 6.7.1 Site Log

The SHSO will maintain a daily health and safety activity log. This log will capture all significant daily activities related to health and safety concerns. The information related to health and safety may also be recorded in the technical field log; however, this will not serve as the primary document for recording health and safety information.

#### 6.7.2 Daily Exposure Monitoring

The SHSO will maintain a daily record of exposure monitoring conducted at field sites. This record will identify the monitored air constituents, the type of monitoring (area, personnel, environmental), and the monitoring result.

#### 6.7.3 Calibration Records

Monitoring instrument calibration information will be recorded on specific forms established for this purpose.

#### 6.7.4 Other Health and Safety Forms

A variety of health and safety forms will be available for capturing specific information that will be organized topically for later reference. Use of forms is described in PPs and SOPs. A standard set of forms will be available in hard copy and computer format.

## Section 7

# DECONTAMINATION

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Decontamination procedures will be implemented at each site to prevent the transfer of contaminated material or hazardous waste to uncontrolled areas.

## 7.1 VEHICLE AND EQUIPMENT DECONTAMINATION

Vehicles and equipment entering controlled areas are in intimate contact with the ground and present the greatest potential for transfer of contamination off-site. Vehicles and equipment will be decontaminated to meet technical requirements and minimize cross contamination of samples, as required. Prior to leaving installation work areas, a final decontamination of all vehicles and equipment that have entered Program controlled areas will be performed under supervision of the SHSO. The SHSO will prepare a written certification of decontamination after inspection of the equipment.

## 7.2 APPAREL DECONTAMINATION

Reusable PPE will be decontaminated each time it leaves the controlled area. Some items, such as hard hats, outer gloves, and boots, may be left within the controlled area for decontamination at the end of the task.

## 7.3 HAZARDOUS WASTE MINIMIZATION PRACTICES

Personnel will be instructed in techniques to minimize hazardous waste, including segregation of investigation-derived wastes, when highly contaminated materials are identified.

## 7.4 TESTING REQUIREMENTS FOLLOWING DECONTAMINATION

Where necessary for sites containing hazardous substances (e.g., PCBs, radiological contaminants, and highly toxic materials) in high concentrations, prerelease testing will be required. Protocols will be included in the SHSPs as required.

## 7.5 CERTIFICATION OF DECONTAMINATION

Certification will be provided whenever equipment is returned to the government, and when required by subcontractors, or rental companies. Full certification will not be provided for equipment that cannot be disassembled for complete inspection (e.g., drilling rigs, cranes, and vehicles.) In such cases, a conditional certification will be prepared.

## Section 7 Decontamination

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### 7.6 FACILITIES FOR PERSONNEL DECONTAMINATION

Facilities for personnel decontamination will be established at sites, commensurate with the degree of contamination potential. Typically, at each group of work locations, a safety-apparel decontamination station will be established. Soap/detergent, rinse water, towels, wash pans, and brushes for scrubbing boots will be available. Waste generated from decontamination will be properly disposed in accordance with the Program and installation waste management plans. The SHSP will specify a decontamination station arrangement and decontamination protocol.

Personnel may be subject to potential skin or eye irritation from various chemicals on-site. An eyewash station and an appropriate method for decontaminating the skin will be available in areas where eye and skin contamination may result from contact with corrosive or toxic chemicals. Typically, the SHSP will require that each subcontractor provide several one-quart eyewash bottles for each field location (e.g., drilling location, wash-down facility) along with a five-gallon carboy filled with potable water reserved for emergency deluge. Where significant quantities of corrosive materials or free product layers are expected, a portable safety eyewash system and deluge that meets the 15-minute-continuous dual-stream flush requirement will be provided.

### 7.7 FACILITIES FOR EQUIPMENT DECONTAMINATION

Facilities will be established for decontamination of sampling equipment, vehicles, heavy equipment (drill rigs, excavators, etc.) at each site. Typical decontamination will consist of steam cleaning. As required, containment facilities will be established to prevent runoff of decontamination solutions.

## Section 8

# **MEDICAL SURVEILLANCE**

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The purposes of the Medical Surveillance Program are:

- to assess the individual's health prior to handling hazardous materials;
- to determine the individual's suitability for work assignments requiring the use of personal protection clothing and equipment; and
- to monitor for evidence of changes in the individual's medical indicators that could be related to the work.

This medical assessment will address expected conditions that would predispose the employee to illness upon exposure to hazardous substances or from the physical demands of using PPE, such as respirators and protective clothing. A satisfactory physician's statement, certifying that the employee is physiologically fit to work in a hazardous environment and wear prescribed respiratory protection, will be received by the H&S staff before any employee starts field work where medical surveillance is required.

## **8.1 PROGRAMS**

All CLEAN II Program employers providing field personnel to CLEAN II sites will be required to establish a medical surveillance program. Team subcontractors have ongoing programs that meet Program and OSHA requirements. Other subcontractors will be required to develop and implement compliant programs in accordance with minimum specifications included in subcontracts. A PP and the SHSP will be used to supplement existing medical surveillance programs as required. All Program personnel will be required by their employer to participate in its medical surveillance program before being permitted to work in controlled areas. Where controlled areas are established, exceptions will be considered for good cause shown, and will require approval of the HSM and OM for limited duties or one-time entry where no significant exposure risk is present.

## **8.2 MEDICAL SURVEILLANCE RECORDS AND TRACKING**

The HSM will maintain, via a stand-alone computer or network database, qualification status of all Program personnel including subcontractors. Due to the confidential nature of medical records, only nonconfidential information will be available via the network. The HSM will publish a monthly update of medical qualification status of Program employees.

## **Section 8 Medical Surveillance**

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### **8.2.1 Employer Records**

Each employer will maintain an independent Program for its employees in accordance with company procedures. The SHSOs and managers will be provided with certification reports and medical restrictions to validate each employee's status with regard to participating in field operations.

### **8.2.2 Medical Restrictions**

All Program employees performing field work shall immediately inform the HSS of any medical restrictions. If the employee desires confidentiality, this information may be forwarded directly to the Program HSM. The use of prescription or nonprescription medication that may impair an employee's judgement or performance to the extent that it may endanger the health or safety of personnel during field operations is prohibited. If an employee is in doubt about his condition, the HSM will arrange a review with the Program medical consultant. Each employer is responsible for managing this matter for its employees. Any limitations based upon medical condition or prescription drug use will be evaluated by the Program medical consultant.

## **8.3 SPECIAL MONITORING PROTOCOL**

Special monitoring protocols may be established where warranted. Examples of special monitoring protocols that may be implemented are set forth below.

### **8.3.1 Radiological Hazards**

Personnel who work in areas with potential for significant external radiation exposure will be monitored for external exposure using standard film or thermoluminescent dosimetry. Where significant airborne exposure is possible, air monitoring and bioassay may be employed to confirm that internal exposure has not occurred.

### **8.3.2 Asbestos**

Asbestos workers will receive the standard OSHA asbestos medical surveillance protocol.

### **8.3.3 Benzene**

Workers in established benzene-regulated areas will receive the standard OSHA benzene medical surveillance protocol.

## **Section 8 Medical Surveillance**

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### **8.3.4 PCB**

Workers in areas characterized by the presence of PCBs where potential exposure levels exceed OSHA limits, notwithstanding respiratory protection, will be monitored pre- and postactivity for serum PCBs.

## **8.4 MEDICAL SURVEILLANCE SUBMITTALS**

Medical surveillance submittals are required prior to work. The health and safety staff will verify qualifications of all field personnel.

### **8.4.1 Team Subcontractors**

Prior to working on any Program site when medical surveillance is required for the first time, team subcontractor personnel shall register with the Program HSM in order to establish medical fitness to work on the project. Medical qualification expiration dates, work limitations, and approved respirators shall be entered into the Program database, for use by SHSOs.

### **8.4.2 Other Subcontractors of Any Tier**

Prior to working on any Program site for the first time when medical surveillance is required, other subcontractor personnel shall register with the SHSO in order to establish medical fitness to work on the project. The SHSO shall forward these records to the Program HSM for inclusion in Program records.

## **8.5 PROGRAM IMPLEMENTATION**

Bechtel will use the services of a firm specializing in occupational medicine practice for employees based in Norwalk and San Diego, California, that are assigned to the CLEAN II Program. San Francisco and Oak Ridge-based employees participate in established surveillance programs. Team subcontractors have established programs for their employees. Bechtel and Team subcontractor programs will meet the highest standards for medical surveillance programs in accordance with each company's corporate standards.

Employees will be examined by a qualified physician who specializes in occupational medicine. The examining physician will perform medical examinations and tests specified in the medical surveillance program procedure, and the physician will review the results to determine whether each worker is medically qualified to perform the

## Section 8 Medical Surveillance

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proposed hazardous work. The need for subsequent medical examinations will be determined by the HSM and the occupational physician.

### 8.6 ASSESSMENT PROTOCOL

A basis health assessment protocol is specified in Program procedures. The occupational physician will tailor each assessment to individual needs and the work environment. The physician will be provided with all relevant individual information.

Additional medical examinations shall be conducted in the following circumstances, as specified in the OSHA standard:

- after acute exposure to any toxic or hazardous material;
- at the discretion of the HSS and the consulting occupational physician when an employee has been exposed to dangerous levels of toxic or hazardous materials; or
- after an employee is injured, becomes ill, or develops signs or symptoms due to possible exposure to toxic or hazardous materials.

Unscheduled medical examinations shall include procedures and tests deemed appropriate by the physician. Examinations will be provided without loss of pay as required by OSHA.

#### 8.6.1 Exit/Termination Medical Exam

All employees participating in the medical surveillance program shall be provided an exit or termination medical exam within 30 days after the conclusion of an individual's work for an employer. The exit/termination exam shall be provided regardless of the cause for an individual to leave the facility. An exit/termination exam may be preempted if the period since the employee's last exam has not exceeded 60 days, the employee has not worked in the exclusion or contamination reduction zones, and the employer obtains the concurrence of the consulting occupational physician and the HSM.

#### 8.6.2 Information Provided to the Physician

The HSM will provide the medical provider a copy of 29 CFR 1910.120 and information describing employee work activities, potential health and safety hazards, anticipated exposure levels, and the PPE anticipated to be used by employees.

## Section 8 Medical Surveillance

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### 8.7 MEDICAL RECORDS DOCUMENTATION

Medical surveillance records shall be maintained by each employer or by the medical provider for all personnel participating in its medical surveillance program. The medical records will typically include:

- the employee's name and social security number;
- physician's written opinions/reports, recommended limitations and results of examinations and tests;
- the Physician's Statement form, signed and dated by the examining or consulting physician, certifying the employee as medically fit to work at the hazardous waste site and requiring the employee to wear respiratory and other PPE;
- any employee medical complaints related to hazardous substance exposure;
- information that has been provided to the physician by the SHSO or the individual's employer;
- a copy of any accident report form pertaining to an accident or injury involving the employee;
- copies of Return to Work Authorizations signed by a physician;
- copies of employee industrial hygiene exposure-monitoring results;
- copies of employee occupational noise exposure-monitoring results;
- copies of employee heat stress monitoring data; and
- any written requests for access to medical records.

Medical records generated for facility personnel participating in the medical surveillance program shall be maintained by Bechtel and the examining or consulting physician(s) for 30 years as stipulated by OSHA requirements.

#### 8.7.1 Access to Personnel Medical Records

Upon receipt of a written request by an employee or an employee's authorized representative, the HSM shall, within a reasonable period of time, allow access by that individual or an authorized representative to that employee's medical surveillance Program record.

A request form for access to medical exposure records will be available from the HSM.

## Section 9

# **MONITORING PROGRAM**

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Hazard monitoring will be conducted on this project by or under supervision of the HSS. Hazard monitoring is conducted as part of a comprehensive industrial hygiene evaluation. Hazard monitoring provides for:

- identification of work areas and activities that require the use of engineering or work technique controls or that require the use of PPE;
- data to confirm that levels of protection afforded by the assigned PPE and engineering or work technique controls are adequate to protect the workers;
- data to document employee exposures (or lack thereof);
- data to assure that all necessary controls and precautions are being taken to protect the public and the environment as well as site personnel; and
- data used to determine the need to implement emergency control measures and contingency plans.

## **9.1 EXPOSURE MONITORING STRATEGY**

Personnel- and area-monitoring strategies will be devised for each site to assure the identification of areas and work activities for which engineering controls and/or respiratory protection are required. Monitoring will be conducted to confirm that the levels of protection provided by the respiratory protection program and by engineering controls are adequate to protect the worker, the environment, and the public.

Use of direct-reading measurements will be supplemented by breathing-zone samples analyzed by approved methods. The SHSP will identify specific atmospheric hazards potentially present and will specify required monitoring.

## **9.2 MONITORING PROCEDURES**

Procedures will be prepared for operation of each type of monitoring instrument. The SHSP will specify all information concerning monitoring requirements. Typically, the following types of information will be provided in the SHSP:

- chemical agent monitoring requirements,
- sampling and analytical methods for air contaminants,
- monitoring methods and action levels for petroleum hydrocarbon only sites,
- air monitoring calibration and maintenance data,

## Section 9 Monitoring Program

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- instrumentation calibration and maintenance information,
- action levels for chemicals at the site for characterized mixtures using screening survey instruments,
- action levels for radionuclides at the site,
- noise-monitoring requirements,
- radiological hazard monitoring requirements, and
- frequency of physiological monitoring for fit and acclimated workers.

### 9.3 TYPES OF MONITORING AND SAMPLING

The HSS has several means to assess employee exposure. Often, professional judgment and experience will be used to select the method most appropriate for given tasks. Typically a combination of techniques will be utilized. Monitoring records will indicate if measurement is indicative of individual exposures or an area-wide exposure. Monitoring for chemical agents will be performed using instrumentation and sampling apparatus as described in the SHSP. Program procedures will be developed for instrument use, maintenance, and calibration. Calibration methods and frequencies are provided in SHSPs.

#### 9.3.1 Personnel Monitoring

Monitoring refers to direct-reading instrumentation used in real time to identify, concentrations of chemicals in ambient air. Most devices available are not specific to any particular chemical; therefore, some assumptions or knowledge is necessary regarding the chemicals being monitored, otherwise conservative assumptions are used to base protective measures on instrument readings.

### 9.4 AIR MONITORING INSTRUMENTATION

The HSS will assure that adequate supplies of monitoring equipment are available prior to start of field work. The HSS will assure that the instruments are used only by those personnel with training and experience in the care, calibration, operation, and limitations of the equipment. Work involving potential exposure to hazardous materials will not be performed unless properly maintained and calibrated monitoring instruments are available for use. Where necessary, monitoring equipment shall be intrinsically safe.

## **Section 9 Monitoring Program**

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### **9.5 RESPONSES TO ABNORMAL CONDITIONS OBSERVED BY MONITORING**

The SHSO has the authority to implement protective measures necessary to maintain protection in accordance with Program standards. Action levels based on airborne monitoring information and responses are defined within each SHSP. The action levels based upon screening instruments, such as photoionization detectors, are tailored to specific knowledge of the chemicals of concern.

### **9.6 HEAT STRESS**

For workers wearing semipermeable or impermeable encapsulating ensembles (i.e., polyethylene-coated Tyvek™ suits,) the ACGIH guidelines for heat-stress evaluation cannot be used. When the temperature in the work area is above 70°F (21°C), or when encapsulating ensembles are used, heat-stress evaluations will be performed by the SHSO and the subcontractor safety coordinator. Suitable methods for evaluating heat stress will be established in SOPs.

### **9.7 RADIATION**

Radiation monitoring requires special techniques, skills, and equipment. The Program will take advantage of any available support capabilities. Where radiation hazards are identified, the SHSP will identify all special requirements. Program personnel will be provided standard (beta, gamma, x-ray) dosimetry for field work in areas that have potential radiation hazards. Site surveys will be performed as required.

### **9.8 BIOLOGICAL AGENTS**

Biological agent atmospheric monitoring will not typically be performed as a routine measure. The SHSO will monitor for hazardous plants and animals and will maintain an appropriate awareness level among all site workers of identified agents and vectors.

## Section 10

# PERSONAL PROTECTIVE EQUIPMENT PROGRAM

Health and safety PPE consists of three components: standard safety equipment required on the specific installations/facilities, special personnel protective equipment, and respiratory protective equipment.

## 10.1 PROJECT POLICY

A uniform safety equipment policy for the Program is described in CLEAN II PP HS 5.1, "Field Safety Program." The policy addresses procurement, specification, replacement, and responsibility for PPE used by Team contractors. All Program personnel will be expected to come to work with proper safety equipment. Any site-specific requirements will be incorporated into SHSPs.

## 10.2 EQUIPMENT

The various types of PPE and definitions of the standard ensembles available for the Program are discussed in CLEAN II PP HS 3.2, "Personnel Protective Equipment."

The level for a particular operation is established prior to start of work in consultation with the HSS and the installation safety coordinator. This level may be altered as conditions change. The SHSO will identify the requirements on a HWP, which will be posted at the job site.

Consideration of the hazards introduced by the PPE ensemble will be included in the determination of the appropriate PPE for each work element. Factors included in the selection of the PPE ensembles on this project shall always include, but not necessarily be limited to:

- the job-hazard analysis associated with a specific work element or task;
- the chemical or physical agent concentration;
- the potential for exposure;
- the results of real-time air-monitoring surveys and exposure sampling;
- existing site-characterization data;
- performance characteristics of selected PPE against known and suspected hazards;
- general site characteristics (terrain or other environmental factors);
- meteorological and climatic conditions; and
- exposure limits.

## **Section 10 Personal Protective Equipment Program**

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### **10.3 ENSEMBLE SELECTION**

This project shall use the classification system for levels of protection defined by Appendix B of 29 CFR 1910.120 with the addition of modified level D.

- Level A Protection - worn when the highest level of respiratory protection and skin protection is needed.
- Level B Protection - worn when the highest level of respiratory protection is needed, but a lesser level (than Level A) of skin protection, is required.
- Level C Protection - worn when the criteria for using air-purifying respirators are met, and skin protection is needed.
- Modified Level D Protection - worn when no respiratory protection and minimal skin protection are needed.
- Level D Protection - worn when no protection beyond standard work clothing is required.

### **10.4 PPE LEVEL ASSIGNMENT CRITERIA**

The protection levels shall initially be assigned based on standard practices and site-specific criteria. The HSM or HSS shall approve all initial PPE selections.

### **10.5 LEVEL CHANGES**

As the facility operation progresses, the SHSO may enact changes in the PPE components of any or all of the ensembles D through B based on:

- ongoing surveillance of the PPE Program;
- results derived via the implementation of the Air Monitoring Program; and
- changes in conditions, materials, work techniques, or any other "new" information relevant to employee exposure.

The SHSO may upgrade or downgrade the level of protection for any given work activity after considering PPE selection factors. Changing the ensemble component to a lower degree of protection will require the approval of the HSS. Upgrades in degree of protection in an ensemble component may be made upon the approval of the SHSO. The HWP system will be used to document changes in the required level of protection.

## **Section 10 Personal Protective Equipment Program**

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### **10.5.1 Workzone PPE Assignment**

Typical assignment of the PPE Level for the various work elements is listed below. These levels provide an initial approach for each of the listed tasks, until further on-site work zone and environmental data is obtained.

#### **Level D**

- Site reconnaissance, surveying, and operations area set-up
- New decontamination pad construction, cut and fill of pad siting
- Monitoring well installation
- Background area sampling

#### **Modified Level D**

- Soil sampling
- Underground tank sampling
- Drilling rig and other heavy equipment decontamination (equipment used in soil intrusive activities) at decontamination pad (low concentrations of contamination)
- Mechanical equipment installation at wellhead

#### **Level C**

- Inspection and sampling of drummed waste
- Extraction and injection well installation
- Drilling rig and other heavy equipment decontamination (equipment used in soil intrusive activities) at decontamination pad (high concentrations of contamination)
- Excavation of underground tanks
- Test pit excavation

The SHSP may vary from these examples based on information available for a specific site.

## **Section 10 Personal Protective Equipment Program**

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### **10.6 PERSONAL PROTECTIVE EQUIPMENT SOURCES**

PPE will be purchased based on specifications that may incorporate NFPA, ANSI, ASTM, SEI or other standards.

Bechtel and Team subcontractors will provide their employees all basic safety apparel, including eye protection, hearing protection, face protection, head protection, fall protection, rain gear, and/or any other specialized protective apparel unique to a trade (e.g., nonconductive gloves, shoes, or shoe covers for electricians or welding leathers) as required.

Other subcontractors will be required to assure that their employees report to work with project-approved equipment; however, the responsibility for purchase will vary with the employer.

Bechtel Team subcontractors and other subcontractors will also supply their employees with specialized protective apparel. This includes the following:

- protective body garments (coveralls, Tyvek<sup>TM</sup> suits, or any other chemical-resistant clothing as required);
- chemical resistant safety toe boots and/or boot covers, chemical-resistant and work gloves, cooling vests, and other items as required and specified in this plan; and
- respiratory protection equipment.

Standard, sturdy, leather work boots or safety-type rubber boots with steel shank and midsole will be required as a minimum during field activities. Appropriate footwear will be specified in the SHSP.

Athletic shoes **WILL NOT BE ALLOWED** for any field work.

### **10.7 INSPECTION AND MAINTENANCE**

All PPE, disposable or reusable, shall be inspected by the user each time an item of PPE is donned. The SHSO will demonstrate the preuse inspection techniques and criteria during the initial site-specific safety and health training and orientation.

## **Section 10 Personal Protective Equipment Program**

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### **10.7.1 Reusable PPE**

Reusable eye and respiratory protection will be decontaminated on a daily basis. Other reusable equipment will be decontaminated upon removal from the controlled area. The HSS may establish additional requirements.

## Section 11

# **HAZARD COMMUNICATION**

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An OSHA-compliant hazard communication program will be implemented at each activity in accordance with CLEAN II PP 1.9, "Hazard Communication."

## **11.1 MATERIAL SAFETY DATA SHEET AVAILABILITY**

Material Safety Data Sheets (MSDS) will be available from the SHSO or from employer HSC. Subcontractors will be required to provide to the SHSO MSDS for chemicals and materials brought on the site before starting work.

MSDSs shall be made available to any site worker upon request, without regard to employer.

The SHSO will maintain an index of MSDS available from each subcontractor at the site.

Information on chemical, physical, and biological agents identified during the investigation will be made available as part of the site informational program. Selected information is presented in this plan as part of the hazard analysis.

## **11.2 TRAINING**

Each employer shall conduct hazard communication training for its employees and maintain records thereof.

## **11.3 LABELING**

The SHSO shall assure that manufacturer labels are not defaced, altered, or removed, and that hazard information remains legible.

## **11.4 SUBCONTRACTORS**

Subcontractors will be required to implement OSHA-compliant hazard communication programs, including training of their employees.

## **11.5 WORKER INFORMATIONAL PROGRAM**

The SHSO shall provide information concerning levels of exposure, site hazards, planned future activity at the site, and other relevant and appropriate information to all site

## **Section 11 Hazard Communication Program**

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workers associated with each site task order by written informational bulletins and by participation at least monthly in each subcontractor's Tool Box or tailgate safety meeting.

### **11.6 Employee Training**

Employee training will include the following:

- methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area;
- the physical and health hazards of the chemicals in the work area along with the symptoms of exposure;
- the measures employees can take to protect themselves from these hazards; and
- the details of the hazard communication program developed by the employer.

## Section 12

# **RESPIRATORY PROTECTION**

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Program use of respiratory protection will be in accordance with 8 CCR 5144 (California) and OSHA 29 CFR 1910.134 (Arizona and New Mexico), "Respiratory Protection" and CLEAN II PP HS 3.1, "Respiratory Protection Program."

### **12.1 TYPE OF EQUIPMENT**

The SHSP will specify the type of equipment to be used to provide respiratory protection for each task. Only NIOSH/OSHA-approved equipment will be utilized.

### **12.2 MEDICAL SURVEILLANCE**

All respiratory protection program participants shall be fully qualified participants of an employers medical surveillance program.

### **12.3 FIT TESTING**

All respiratory protection program participants shall receive an annual fit test in accordance with their employer's respiratory protection program. Fit tests shall only be valid for the make, model, and size of respirator fitted.

### **12.4 RESPIRATOR CLEANING AND MAINTENANCE**

Each respirator user employed by Bechtel National, Inc., shall be issued a respirator for their exclusive use. Subcontractors also will be encouraged to follow this policy.

Respirator users with individually assigned respirators will be responsible for the cleaning and routine inspection of the own respirators. Each respirator user shall be instructed to inspect the respirator prior to each use, after each use, and after cleaning in accordance with SOPs.

### **12.5 OTHER SUBCONTRACTORS**

Each subcontractor shall implement an independent respiratory protection program for its personnel. Subcontractors shall submit a fit test certificate and medical certification as specified in their subcontract. Subcontractors shall provide buddy, standby, and rescue personnel when required for special operations.

## Section 12 Respiratory Protection Program

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### 12.6 RESPIRATOR SELECTION

Respiratory protection will be selected based on the following criteria:

- The estimated contaminant concentration is in the range requiring respiratory protection.
- The estimated factor by which the contaminant concentration may exceed the contaminant exposure limit.
- The contaminant is a gas, vapor, mist, dust, or fume.
- The potential exists for an immediately dangerous to life or health (IDLH) contaminant concentration.
- The detection of chemical contaminant warning properties (e.g., irritation, odor).

### 12.7 Respiratory Protection Training

Training in the use of respiratory protective equipment is the responsibility of each employer. Training in the use of negative-pressure filter respirators is presumed with completion of 40-hour training session. Proof of training of each employee in the use of supplied-air equipment will be required.

### 12.8 RESPIRATOR FIT TESTING

Each employer is responsible for fit testing of its employees. Each individual who must wear a respirator will be required to be clean shaven in the sealing areas of the respirator face piece at the time of fit testing. Each respirator user will be respirator fit-tested at least annually. Upon donning the respirator device or before entering any restricted work area, each respirator wearer will be required to perform a negative- and positive-pressure fit test.

### 12.9 RESPIRATOR ASSIGNMENT

Respirators assigned on an individual basis will be marked with the employee's name or identification number.

## Section 12 Respiratory Protection Program

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### 12.10 RESPIRATOR PROGRAM REQUIREMENTS

Respirator program requirements pertaining to cleaning, inspection, maintenance, etc., are described in CLEAN II PP HS 3.1, "Respiratory Protection Program" and subordinate SOPs (3.1.1, 3.1.2, and 3.1.3).

## Section 13

# **TRAINING ASSIGNMENTS**

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All Team and other subcontractor employees involved with field activities will complete a 40-hour health and safety training course or will be trained in accordance with the hazardous waste training requirements specified in 29 CFR 1910.120 prior to performing Program field work. Personnel directly supervising employees in the exclusion or contamination reduction zone shall have received the 8-hour Supervisor's Training for hazardous waste operations. All personnel required to meet the above requirements shall be current with respect to the 8-hour refresher requirements of 29 CFR 1910.120. Each individual will have a current training-completion certificate on file with the HSM.

### **13.1 PROJECT TRAINING**

All personnel will attend a Program health and safety orientation presented by the SHSO or HSS prior to beginning field work on the project. This is a one-time training session that may be combined with site-specific training for personnel reporting to a site for the first time under the CLEAN II Program. This training shall address general Program policies, rules and regulations, and other matters that are common between Program sites.

### **13.2 SITE-SPECIFIC TRAINING**

Prior to commencing work activities, all personnel will be required to attend a safety orientation given by the SHSO. This meeting is required by SWDIV, Bechtel policy, and OSHA 29 CFR 1910.120. Attendance at the meeting is mandatory for all project personnel and supervisors. New employees reporting to work after the job starts are also required to attend a safety orientation prior to engaging in any work activities. This orientation will be performed by the SHSO or by the subcontractor HSC. Documentation of this orientation shall be provided to the SHSO before the employee may begin field work.

### **13.3 SAFETY BRIEFINGS**

The Bechtel SHSO, and subcontractor supervisors shall conduct Tool Box Safety Meetings on a regular basis to assure that new or important existing information regarding site health and safety is given to all personnel. The SHSO will provide a suggested topic for the weekly meeting and will provide periodic information to be presented to all hands at these meetings. The SHSO will participate in each subcontractor safety briefing at least monthly.

## **Section 13 Training Assignments**

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### **13.4 DOCUMENTATION**

Each subcontractor shall provide the SHSO a copy of weekly meeting minutes together with a list of attendees. Required training submittals shall be maintained by the HSM.

### **13.5 TRAINING RECORDS**

The HSM will administer the training records management program. The HSM will maintain a system to track field employee training. Copies of training certification documentation for all Team and other subcontractors will be maintained by the HSM.

### **13.6 PERIODIC HEALTH AND SAFETY TRAINING AND SAFETY SESSIONS**

The Program HSM shall schedule and conduct periodic sessions with PMs, CTOLs, and other Field Team Leaders to discuss health and safety information and lessons learned from Program field experiences and to discuss improvement in health and safety procedures execution.

## Section 14

# **SUBCONTRACTOR REQUIREMENTS**

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The subcontractor representative will provide the following to Bechtel in advance of site work as specified in the contract:

- designation of the competent person for excavation, trenching, confined space assignments, etc., as required;
- designation of the HSC and Alternate HSC;
- designation of the company HSO or HSM;
- copies of the subcontractor's Health and Safety Plan for the site and SOPs;
- copies of the subcontractor's Health and Safety Program, Injury and Illness Prevention Program, and Code of Safe Work Practices, as applicable;
- copy of the subcontractor's Respiratory Protection Program, Medical Surveillance Program, Employee Exposure Records Maintenance Program, Hazard Communication Program, Emergency Plans, and any other OSHA-required program documents;
- material Safety Data Sheets and product names index for all products brought on site; and
- written agreement to follow the SWDIV CLEAN II Project Health and Safety Plan requirements applicable to subcontractors.

## **14.1 PERSONNEL DOCUMENTATION REQUIREMENTS**

All personnel will be required to have available either before or when reporting to the site all documents necessary to verify that they have satisfied regulatory and Program requirements. The required documents will be identified in each SHSP.

## Section 15

# **EMERGENCY RESPONSE PLAN**

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Emergency-response and notification procedures for each site will be prepared in accordance with OSHA requirements. The plan for each site will consider site-specific features and will be integrated with the activity emergency-response plan. Site-specific plans typically include:

- specification of required emergency equipment,
- evacuation routes and maps,
- safe locations to meet,
- emergency signals,
- emergency communications, and
- emergency PPE and respiratory protection to be maintained.

### **15.1 GENERAL EMERGENCY RESPONSIBILITIES**

Emergency responsibilities under a declared emergency (emergency plan activated) will fall to individuals designated as Emergency Response Team members. The Emergency Response Team will be led by the emergency coordinators. An Emergency Coordinator, typically the site manager, will be responsible for supervising all project emergency-response activities and will have decision-making authority.

The Emergency Coordinator will:

- be identifiable to local emergency assistance personnel;
- designate an alternate at the time of emergency plan activation;
- resolve safety and health problems, with assistance from the SHSO;
- obtain equipment and supplies as needed; and
- promptly determine the character, source, amount, and extent of any release; assess the possible hazards to people and the environment; and enact procedures to limit damage.

An emergency coordinator and alternate will be designated for each field site from personnel who are normally on site during field operations. The emergency coordinator and SHSO duties will normally be performed by different individuals. The SHSO plays a key role in emergency response. Emergency response duties of the SHSO include:

- preparing for and overseeing any emergency evacuation of the site;

## **Section 15 Emergency Response Plan**

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- assuring that all personnel are familiar with procedures for communicating with local emergency services and project administrators;
- maintaining a logbook of all on-site emergency incidents;
- notifying all local emergency assistance personnel (either the SHSO or the site superintendent will document and assure that appropriate parties are notified by phone in a timely manner in the event of an emergency); and
- supporting the emergency coordinator, as required.

### **15.2 EMERGENCY RESPONSE TEAM**

The Emergency response team consists of the emergency coordinator, site health and safety officer, and designated staff who may remain on site during emergency conditions. All other personnel will evacuate to designated meeting locations.

### **15.3 EVACUATION PLAN**

The emergency plan will be activated for any required evacuations. The Emergency Coordinator will direct all emergency evacuations. Specific evacuation routes from the site will be established before work begins and will be shown on the posted site status map. All personnel will meet at a predesignated meeting point unless otherwise directed by the Emergency Response Team. The Emergency Coordinator will account for personnel and determine whether any personnel are missing.

### **15.4 PERSONNEL RESCUE**

If personnel are identified as missing or in known danger, search and rescue will be accomplished by the Emergency Response Team in conjunction with the local fire department or other emergency services summoned to the scene. Project personnel are only authorized to perform initial rescue or emergency-response operations outlined in this section.

### **15.5 EMERGENCY SIGNAL SYSTEM**

Emergency alert communication will consist of an audible alarm system. Each subcontractor may maintain an air horn or other signal device to be used in the event of major medical, fire, or other environmental emergency. Emergency signals used will be in accordance with activity emergency signals or as directed by the activity emergency coordinator. The specific emergency signals/alarm system will be outlined in the SHSP for each site.

## **Section 15 Emergency Response Plan**

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### **15.6 SITE SECURITY DURING EMERGENCY OPERATIONS**

Sites will be shut down, secured, and posted to prevent access of unauthorized (nonemergency) personnel if an evacuation has occurred and/or an emergency is in progress.

### **15.7 EMERGENCY PLANNING FOR REMOTE SITE LOCATIONS**

#### **15.7.1 Emergency Facilities Locations**

Emergency medical facilities and means of transport will be prearranged. This may involve contracting with an emergency ground or air ambulance service in remote locations.

#### **15.7.2 Map to Emergency Medical Facility**

Maps and emergency instructions will be prepared prior to field work and will be maintained readily available on-site and in all site vehicles.

#### **15.7.3 Evacuation Route**

Evacuation routes and meeting points will be preestablished and reviewed with all site personnel in the site orientation and as necessary in subsequent Tool Box Safety Meetings.

#### **15.7.4 Supplemental First Aid and Survival Supplies**

Appropriate supplies will be specified in SHSPs.

### **15.8 COMMUNICATIONS**

Emergency medical, fire, law enforcement, and activity support telephone numbers will be posted by all Program telephones and will be maintained in field vehicles. A map defining the location of backup telephone service will be posted with the emergency telephone numbers.

On-site communication systems will be established to provide intrasite communication as well as off-site communication. Unique site requirements may require implementation of special communication techniques. These will be coordinated with Navy facilities to

## **Section 15 Emergency Response Plan**

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minimize expense. In locations where public or facility telephone systems are not available or are not close to the work site, a portable/cellular telephone or radio/radiophone system will be used.

Typically, portable two-way radio systems will be used for intrasite communication. An alert signal system will be provided for emergency signaling.

### **15.9 EMERGENCY MEDICAL FACILITIES**

Primary and secondary medical facilities to be used for emergency services shall be identified. A map highlighting the route from the work site shall be provided. Copies of these maps will be posted by staging areas and will be maintained in work-site vehicles.

### **15.10 Arrangements With Activity and Civilian Emergency Support Agencies**

Arrangements will be made to familiarize the local base police, fire departments, medical emergency services, and emergency coordinators with the site layout, the nature and scope of work, hazardous materials and waste handled, places where activity personnel will work, locations of entrances and roads inside the site, and possible evacuation routes.

The designated hospitals and emergency transport organizations will be familiarized with the types and properties of hazardous materials used, storage locations, and waste handled at the facility.

Off-site emergency services shall also be familiarized with decontamination equipment available on the facility.

Emergency telephone numbers for each subcontractor will be included in SHSPs.

## Section 16 **FIRST AID**

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### **16.1 FIRST AID AND CARDIOPULMONARY RESUSCITATION (CPR) TRAINING**

Certain Program participants shall be required to be currently qualified in first aid and cardiopulmonary resuscitation (CPR). Qualification means successful completion of a U. S. Bureau of Mines, American Red Cross, or equivalent first aid and CPR course within the last three (3) years and one (1) year, respectively. Current qualification shall be documented in the employer's training record file, and the employee shall carry a card with the qualification and date. A qualified individual shall be classified as a First Aid Attendant when so designated to serve in that capacity.

There shall be at a minimum of at least two (2) qualified First Aid Attendants available for all field work.

For field work in remote areas, all personnel shall be First Aid/CPR qualified.

This requirement will be specified in the SHSP and shall apply to Team and other subcontractors.

The SHSO will verify that two qualified personnel are available on a daily basis. The daily site sign-in log may be used to identify qualified personnel.

Each employer on-site will provide a contractor's first aid kit, typically a 36-unit, contractor's Type "D" kit for each work area or work vehicle. Containers shall be weatherproof, and each item shall be maintained in a sterile condition.

The SHSO will verify, via weekly inspection, that first aid kits are available, clean, and in serviceable condition. Each subcontractor will be responsible for inspection of its supplies.

Hospital transport services will be prearranged as part of the plan for transporting severely injured personnel. For work in remote areas, the Program will attempt to prearrange transport with existing government resources, where available. Emergency routes, transportation providers and 24-hour contacts will be posted, maintained in site vehicles, and provided in SHSPs.

Treatment and emergency decontamination of workers injured while in an area that is controlled because of hazardous chemicals or hazardous wastes will be in accordance with CLEAN II PP HS 2.3, "First Aid."

## Section 17

# SAFETY RULES

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Site safety rules are included in each SHSP. A comprehensive set of safety requirements will be included in Program procedures and SOPs. An abbreviated list of safety rules is set forth below:

### 17.1 GENERAL SAFETY RULES

The following safe work practices will be enforced at the site.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material will be prohibited in any area where the possibility of contamination exists.
- Face and hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.
- Legible and understandable precautionary labels will be prominently affixed to containers of scrap, waste, debris, and contaminated clothing.
- Contaminated protective clothing will not be removed from the controlled area until it has been cleaned or properly packaged and labeled.
- All wastes generated from the project activities (soiled PPE, decontamination waste, etc.) will be contained and disposed of as specified in the work plan.
- Smoking will only be permitted in designated areas.
- Personnel within controlled areas must use the "buddy" system.
- Excessive facial hair, which interferes with a satisfactory fit of the mask-to-face seal, will not be permitted.
- Contact with potentially contaminated substances will be avoided. Personnel will not walk through puddles, pools, mud, kneel on the ground, lean or sit on equipment, or place monitoring equipment or tools on contaminated surfaces.
- Personnel will not be permitted to wear contact lenses.

### 17.2 FORBIDDEN PRACTICES

Forbidden practices are listed separately in each SHSP. In addition, no workers shall take any action for which they are not aware of consequences that may impact health or safety. If such activities become necessary to complete any phase of the work, the necessary safety and health requirements and an approved HWP will be prepared by the SHSO as an addition to the SHSP.

## Section 17 Safety Rules

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### 17.3 WORK OVER OR NEAR WATER

Special requirements are established in SHSPs for work over, on, or near water.

### 17.4 FIRE SAFETY

All site personnel will comply with all fire safety rules. For a complete list of fire safety requirements, refer to CLEAN II PP HS 2.5, "Fire Prevention and Protection," and CLEAN II SOP H 5.1.1, "Hazardous Work Permits."

The following general fire safety rules will be adhered to for site investigation activities.

- All personnel will be informed of the location of the nearest fire alarm box and the local fire-reporting telephone number.
- Smoking is permitted only in authorized and posted smoking areas.
- Strike anywhere (stick) matches are prohibited at field sites.
- A permit is required prior to any hot work including, welding, cutting, grinding, or other spark producing activity.
- Each vehicle will carry a 2A:20B:20C type rated fire extinguisher.
- Lay-down areas for materials will be approved before use.
- Approval to block roads, park heavy machinery or equipment, or set up drill rigs shall be obtained in advance.
- All personnel shall know the area escape route and alternate route.

## Section 18

# **ACCIDENT AND INJURY REPORTING**

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Each employer will be responsible for keeping and recording accident and injury statistics for OSHA compliance. Injuries and accidents will be promptly reported to the HSM so that prompt investigation and corrective action may be taken.

## **18.1 OCCUPATIONAL INJURIES**

The following steps shall be taken by on-scene personnel in the event of personnel injury.

- Assess the situation quickly.
- Remove injured persons from further danger if safe for rescuer.
- Render first aid if trained; if not trained, seek immediate assistance.
- Send for help; notify emergency response or medical personnel.
- Perform decontamination if required, if this will not interfere with necessary medical treatment.

## **18.2 REPORTING**

All injuries shall be reported according to the following procedure.

- The employee's supervisor will be notified promptly.
- The employee's supervisor will notify the company (subcontractor) safety coordinator and the Bechtel SHSO.
- The SHSO will notify the project manager and the installation safety coordinator and will forward copies of the written reports to the Health and Safety Supervisor, Health and Safety Manager, and Operations Manager.
- Standard Bechtel injury report forms will be used for Bechtel personnel; while subcontractors shall use their standard accident/injury reporting formats.

## **18.3 SUBCONTRACTORS**

Subcontractors shall forward injury reports within 24 hours to the Bechtel HSS.

## Section 19

# **SITE VISITOR REQUIREMENTS**

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Site visitors are defined as those who are not employed at the project site, do not routinely enter restricted work areas, and will only be within controlled areas for brief periods. Visitors may or may not routinely enter other hazardous waste operations sites. Visitors may not be required to meet all aspects of the health and safety program, based upon their duties and potential exposures. Visitors may include government inspectors, vendors, repair personnel, governmental officials, and VIPs. Policies and procedures necessary to protect visitors are discussed in SHSPs.

## **19.1 GENERAL REQUIREMENTS**

The following requirements apply to visitors whose purpose is to observe site conditions or field activities.

- The SHSO will be notified of the nature and duration of the visit before visitors are permitted to enter a restricted work area.
- The visitor's log will be completed, including the individual's name, the date, and the name of the company or agency represented.
- The site visitor will be escorted by a CLEAN II SHSO or her/his designee at all times while in restricted work areas of the site.
- Visitors will comply with all site-specific health and safety requirements.

## **19.2 MEDICAL SURVEILLANCE**

Each visitor will be required to provide proof of participation in an occupational health program if access is necessary into a controlled area where respirator use is required. A visitor who cannot provide a physician's statement or other acceptable documentation stating that he is medically qualified to work with hazardous materials and to wear a negative-pressure respirator will be restricted from entry.

## **19.3 TRAINING REQUIREMENTS**

All visitors, even if escorted, must be briefed on the SHSP (e.g., potential hazards and safety procedures) before entering restricted work areas.

## Section 20

# PERSONNEL REQUIREMENTS

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All personnel assigned to work on this project are expected to be familiar with the SHSP, Program Health and Safety Procedures and SOPs, and their employer's company safety requirements.

The individual personnel expectations set forth below are included in each SHSP.

- All personnel are expected to fully comply with all rules and regulations set forth in Program documents.
- All personnel are expected to report to work, ready to work, and free from influence of drugs or alcohol.
- All personnel shall report to work, with all safety gear required for anticipated tasks. Bechtel will not provide or loan hard hats, safety glass, boots, or gloves to subcontractors.
- All personnel are required to report all injuries and incidents, even if considered minor.
- All personnel are required to comply with the buddy-system requirements within controlled access areas.
- All personnel are required to follow the direction of the SHSO on safety or health matters, stop work orders, or emergency evacuations.
- All personnel will be required to sign acknowledgment of training received on the project and an agreement to follow all rules and regulations.
- Eating, drinking, smoking, chewing, etc., will not be tolerated in controlled areas.

## Section 21

# **SPILL CONTROL PLAN**

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Spill control and containment procedures will be included in each SHSP. Each SHSP will identify the procedures and materials that will be maintained at the site for emergency response to monitor and mitigate spills of drilling fluids, hydraulic fluid from equipment, or other materials. The essential elements of spill control for investigative work are discussed below.

Chemicals or hazardous substances could be spilled during site tasks as a result of:

- transportation accidents;
- improper packaging practices;
- rupturing of tanks, drums, or other storage containers; or
- improper handling of hazardous materials during off-loading.

For minor spills, CLEAN II personnel at the site will collect, containerize, and package materials generated from such incidents. All spills will be reported to the activity PM, CTOL, SHSO, and HSS.

In the event of serious spills that cannot be controlled or completely cleaned up, the emergency plan will be activated.

As soon as a substance release is discovered, all nonessential workers should evacuate the immediate area to reduce the likelihood of spreading contamination or being exposed to contamination.

The emergency coordinator will direct the spill response and will stay at the spill area until the area has been cleaned, surveyed, and secured for release.

## Section 22

# **SITE SPECIFIC HEALTH AND SAFETY PLANS**

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Each site (defined as either a CTO, Naval facility, or physical location) shall have an SHSP or supplemental plan. The content and organization of CLEAN II SHSPs will follow the organization and content set forth below.

All plans shall address the minimum content specified; however, the level of detail will vary with the nature and scope of work.

### **Section 1 - Introduction**

The introduction to the SHSP shall identify the following:

- applicable state or federal health and safety requirements by reference;
- applicable CLEAN II programmatic health and safety requirements;
- specific task and site name;
- purpose of the SHSP (list specific functions of the plan); and
- necessary and appropriate disclaimers.

### **Section 2 - Site Description**

The site description section of the SHSP shall provide the following:

- a general description of the topography and physical site characteristics;
- a description of the general and specific work locations;
- a brief discussion of the site history as it pertains to the scope of work and the likely hazards expected; and
- site maps, including a site-locator map, facility map, and detailed maps, as required.

### **Section 3 - Scope of Work**

The scope of work section shall provide a brief summary of the work plan in nontechnical language understandable to the average site employee. The scope section shall identify the tasks to be performed (e.g., surface sampling, exploratory boring,) the period of work for which the tasks are planned, and the principal subcontractors performing work on the site.

## **Section 22 Site-Specific Health and Safety Plans**

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### **Section 4 - Organization/Key Personnel and Responsibilities**

The organization/key personnel section of the SHSP shall identify the organizational structure for implementing the operational health and safety program on the site and shall describe the interrelationships between contractors.

The key personnel section shall identify, by name and title, those key on-site personnel having health and safety duties or responsibilities, including all subcontractor HSCs. The names of these personnel and the means of contacting an alternate for each position shall be set forth. Off-site personnel response for emergency response functions only are to be identified in Section 15, Emergency Response.

Unique responsibilities specific to the site, other than those detailed in SOPs, shall be set forth in this section.

### **Section 5 - Hazard Identification**

This section of the plan shall describe the results of a hazard screening analysis performed in accordance with CLEAN II Program Procedure 4.1, "Site Hazard Assessment." A summary of the identified hazards may be presented in tabular form. The evaluation summary shall indicate common physical, chemical, and biological hazards; and it shall describe briefly any hazard anticipated for the site scope of work. The evaluation summary shall also indicate general compensatory measures planned.

### **Section 6 - Hazard Analysis**

The hazard analysis section of the SHSP shall describe for each anticipated hazard, the nature of the hazard and the protective measures to be used for this hazard. The analysis in this section is hazard-specific, not task-specific.

This section shall contain by incorporation or reference, a discussion of the nature of the specific hazard and the specific safety rules for identified hazards ( e.g., work over water, heat stress, confined space entry, specific chemicals). Typically, hazards analysis will be organized and presented by physical, chemical, and biological hazards.

This section will present, for chemicals suspected at the site, the following information:

- toxicological properties of chemicals;
- exposure limits used by the project;

## **Section 22 Site-Specific Health and Safety Plans**

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- physical properties such as odor threshold, explosive limits, reactive properties, and other physical properties (flash point, vapor pressure, etc.); and
- special restrictions and limits for radionuclides.

### **Section 7 - Site Control**

This section of the plan will describe the site-specific requirements for site control. The following provisions shall be detailed in the SHSP:

- the level of authorization and approval to enter the facility;
- the level of authorization and approval to enter the controlled area of the task;
- the level of physical site control (e.g., barriers, fence, guards);
- the level of record keeping associated with site access;
- the posting requirements for the site (location, content of warning signs, etc.); and
- a general arrangement diagram showing the site controls, all approved entrances and exits, locations of facilities (decontamination, utilities, eyewash stations, etc.).

### **Section 8 - Decontamination**

This section shall contain, by incorporation or reference, a discussion of the nature of the decontamination procedures to be used on the project. Specific information that shall be set forth in the SHSP is as follows:

- identification of specific step-by-step protocols for each level of protective equipment;
- special procedures for vehicles and equipment decontamination;
- decontamination station arrangement diagrams; and
- decontamination instructions for visitors and vehicle operators entering site-controlled areas.

## **Section 22 Site-Specific Health and Safety Plans**

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### **Section 9 - Medical Surveillance**

This section shall contain, by incorporation or reference, all site-specific medical monitoring requirements for site personnel. The SHSP shall specifically set forth special monitoring protocols, bioassay procedures, or medical tests required due to chemical, physical, or biological agents present at the site.

### **Section 10 - Monitoring Program**

This section shall contain all site-specific monitoring requirements for evaluation of personnel exposure and environmental (site or community) air monitoring performed by the project. The following types of information shall be presented in the SHSP:

- chemical physical, or biological agents for which monitoring shall be performed;
- monitoring methods, frequencies, and responsible personnel for each agent;
- list of instruments, calibration frequencies, and calibration methods for each instrument or monitoring technique;
- list of sampling media, sample flow rate, and analytical methodology for each agent; and
- list of action levels, by method, for each agent.

This section shall contain, by incorporation or reference, all procedures necessary for accomplishing the monitoring.

### **Section 11 - Personal Protective Equipment Program**

This section shall set forth, by incorporation or reference, the basic safety equipment ensemble for site work, incorporating, as applicable, the host facility requirements for contractors.

This section shall set forth any host facility policy regarding PPE.

This section shall set forth the task-specific personnel protective ensemble for each task to be performed. A PPE level (e.g., A, B, C, D) and a detailed list of equipment shall be set forth.

## **Section 22 Site-Specific Health and Safety Plans**

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### **Section 12 - Hazard Communication**

This section shall set forth, by incorporation or reference, the means of communicating technical hazard information, medical information, and emergency first-aid information to site workers, emergency-response personnel, and medical personnel having a need to know.

This section will describe how site workers may obtain MSDSs for products used on-site and equivalent information for chemicals found on-site.

### **Section 13 - Respiratory Protection Program**

This section shall set forth, by incorporation or reference, the site-specific requirements for implementation of the CLEAN II Project Respiratory Protection Program. Specific elements of the Program to be specified shall include the following:

- any necessary site-specific instructions to workers using respirators; and
- the buddy system, standby, and rescue provisions necessary when using respirators to enter IDLH atmospheres or confined spaces.

### **Section 14 - Training Program**

This section shall set forth, by incorporation or reference, the site-specific requirements for implementation of the CLEAN II Project Training Plan. The SHSP shall include a training matrix, detailing the types of training required for each category of site worker (e.g., supervisor, regular site worker, limited site worker, one-time visitor, repairman.)

This section shall describe any site-specific training, beyond that required by OSHA, such as CLEAN II project orientation, host facility orientation and safety rules, special hazard training, safety briefing (Tool Box) training requirements, and special respiratory protection training.

### **Section 15 - Subcontractor Requirements**

This section shall set forth, by incorporation or reference, requirements for proper subcontractor interface with the CLEAN II project requirements in health and safety, including, but not limited to, designation of an HSC for the subcontractor, any written agreement required of the company and individual personnel, and personnel documentation requirements to enter the site.

## **Section 22 Site-Specific Health and Safety Plans**

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### **Section 16 - Emergency Response Plan**

This section shall contain the site-specific emergency-response plan. The plan preparer shall consider the following elements in development of this section:

- available host facility resources,
- access to and from the site,
- remoteness of the site,
- available communication facilities, and
- existing host facility emergency-response plans.

The site-specific emergency-response plan shall contain the following information:

- emergency notification telephone numbers;
- required emergency equipment;
- Emergency Response Team description, organization, and responsibilities;
- basic emergency response instructions to fire, personnel injury, vehicle accidents, spills of hazardous materials or wastes, and property damage;
- evacuation signals and alert signals;
- evacuation plan, including escape routes and meeting locations;
- personnel accountability procedures;
- emergency site-security procedures;
- list of site emergency facilities and locations; and
- maps to designated emergency medical facilities.

### **Section 17 - First Aid Plan**

This section shall set forth, by incorporation or reference, the site-specific first aid plan, which shall include the following:

- minimum first aid training requirements for each subcontractor, and
- preferred emergency medical provider for specific injuries;

## **Section 22 Site-Specific Health and Safety Plans**

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### **Section 18 - General Safety Rules**

This section shall provide a summary of safety rules that should be known to all site workers. A complete set of safety rules shall be incorporated by reference to CLEAN II SOPs, host facility requirements, and regulatory requirements.

Any requirements for work permits or hazardous operation permits shall be identified in this section.

### **Section 19 - Visitor Requirements**

This section shall set forth the requirements for visitors, government employees, military personnel, regulatory agency personnel, repairman, etc., to enter the site. Specific guidance for medical surveillance, training, and protective equipment shall be specified.

### **Section 20 - Personnel Requirements**

This section shall describe the CLEAN II Program personnel requirements and expectation of all personnel working on the project site, including but not limited to training courses and documentation, medical exclusions, drug abuse and alcohol-use policy, medicinal drug-use policy, and host facility requirements.

### **Section 21 - Spill Control Plan**

This section shall describe the site-specific requirements to meet all hazardous material regulations, including but not limited to, hazardous waste storage, community right to know, spill control and pollution prevention, inventory reporting, hazardous material business plan, Proposition 65, etc. A spill control plan shall be prepared specific to the facility, if required.

Southwest Division  
Naval Facilities Engineering Command  
Contracts Department  
Pacific Highway, Rm. 135  
San Diego, California 92312-5187

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## COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

### NAVY CLEAN II

## SITE HEALTH AND SAFETY PLAN

### Revision 1

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## Foreward

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This Site Health and Safety Plan (SHSP) has been prepared for use by Bechtel National, Inc. (BNI or Bechtel), in support of technical environmental services for the Navy Southwest Division, Naval Facilities Engineering Command (SWDIV). This SHSP implements the Bechtel Health and Safety Policies contained in Corporate Policy 111, "Safety and Health," the applicable Occupational Safety and Health Administration regulations and SWDIV requirements, as described in the CLEAN II Program Health and Safety Plan.

This SHSP describes the requirements for field implementation of the Navy CLEAN II Health and Safety Program. Supporting documents for this plan are the site-specific Health and Safety Plan Supplement, CLEAN II Program Procedures (PP) and CLEAN II Standard Operating Procedures (SOP). This site-specific plan implements the CLEAN II Program Health and Safety Plan.

This SHSP has been prepared by the Bechtel Health and Safety Manager, reviewed by the Bechtel Operations Manager and the Bechtel Quality Manager, and approved by the Bechtel Program Manager. The SHSP has been submitted to the Navy for concurrence. Field revision of this plan for specific activities is authorized when controlled in accordance with SOP 1.2.1, "Field Revision of Health and Safety Plans".

This plan includes requirements for all personnel entering controlled areas or handling potentially contaminated equipment. Use of the term Program employees refers to Bechtel National Inc.(Bechtel), Brown and Caldwell (BC), and Kleinfelder (K) employees; use of the term "team subcontractors" refers to BC or K employees only; "other subcontractors" refers to all other Bechtel subcontractors of any tier.

# **SITE SPECIFIC HEALTH AND SAFETY PLAN**

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## **1.1. INTRODUCTION**

This site Health and Safety Plan (SHSP) has been prepared in accordance with the requirements of Bechtel National, Inc. (Bechtel), the Southwest Division Naval Facilities Engineering Command (SWDIV), and applicable federal or state Occupational Safety and Health Administration (OSHA) requirements to support a work environment that does not compromise the health or safety of CLEAN II Program personnel, host facility personnel, subcontractors, vendors, and site visitors during execution of the SWDIV CLEAN II project activities. This plan will also include measures to minimize impact off-site from project operations.

## **1.2. SPECIFIC REQUIREMENTS**

This plan has been prepared in order to meet the specific requirements of OSHA, SWDIV, and the Navy that are contained in the following documents:

- Safety and Health Requirements Manual, EM 385-1-1, Rev. 1992 , US Army Corps of Engineers,
- Navy/Marine Corps Installation Restoration Manual, Feb. 1992,
- CAL-OSHA 8 CCR 5192, Hazardous Waste Operations and Emergency Response,
- OSHA 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response,

and Bechtel requirements as set forth in the Bechtel Corporate Safety and Health Services Manual.

## **1.3. PURPOSE OF PLAN**

This plan provides the following functions:

- identifies the project, scope of work, project locations;
- identifies the potential hazards;
- identifies personnel protection requirements and safe working procedures
- identifies reference documents that form the complete safety program;
- establishes the monitoring and site control programs; and
- establishes a contingency plan and interface to the site contingency plan.

Refer to the supplement for requirements specific to a particular task.

#### **1.4. REFERENCE DOCUMENTS**

This plan is not complete without the following reference documents on-site during work execution:

- applicable site-specific health and safety plan supplements and changes;
- the applicable workplans; and
- the SWDIV CLEAN II Program Health and Safety Standard Operating Procedures and Program Procedures referenced by this plan (CLEAN II SOP & PP). A list of procedures is provided as Attachment 1 of this plan.

#### **1.5. INSTALLATION REQUIREMENTS**

Each activity, installation or base has established specific requirements for work at that activity. The CLEAN II point of contact for activity specific requirements is the Resident Officer in Charge of Construction (ROICC) or an activity designated installation safety coordinator. The Program will consider activity-specific requirements in planning field activities and will incorporate applicable requirements into site-specific documents.

## Section 2

# SITE DESCRIPTION

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### 2.1. GENERAL

Refer to the plan supplement and work plan for location maps. Many sites are operating military installations. As such, a variety of hazards are present associated with Program work as well as with the ongoing military installation operations. Special procedures as set forth within this plan are essential for the protection of life, health, and property.

### 2.2. WORK AREAS

Refer to the CTO-specific work plan and/or health and safety plan supplement for specific work locations.

### 2.3. SITE DESCRIPTION AND HISTORY

Refer to the CTO-specific work plan and/or health and safety plan supplement.

### 2.4. SITE TOPOGRAPHY AND CLIMATE

Refer to the CTO specific work plan and and/or health and safety plan supplement.

### 2.5. KNOWN WASTE CHARACTERISTICS

Refer to the CTO specific -work plan and and/or health and safety plan supplement.

## Section 3

# SCOPE OF WORK

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### 3.1. WORK PLAN SUMMARY

Work to be performed at the site is described in the work plan or the health and safety plan supplement.

Detailed descriptions of the field sampling methods and other field activities are available in the sampling and analysis plan or the work plan for the site.

### 3.2. TASK SUMMARY

The site-specific tasks are described in the work plan and the health and safety plan supplement.

## Section 4

# ORGANIZATION AND RESPONSIBILITIES

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### 4.1. GENERAL

Program Health and Safety organization and responsibilities of Health and Safety staff are described in CLEAN II SOP 1.1.1, "Health and Safety Organization and Responsibilities." Responsibilities of other key personnel in the CLEAN II Program with respect to health and safety are described in Section 4 of the Program Health and Safety Plan.

Responsible personnel for CTO site work are identified in the CTO site-specific health and safety plan supplement.

### 4.2. PERSONNEL REQUIREMENTS

Subcontractor personnel requirements are identified in Section 15 of this HASP.

### 4.3. HEALTH AND SAFETY OFFICERS

The site health and safety officers specific responsibilities are set forth in SOP 1.1.2, "Site Health and Safety Officer Responsibilities."

## **HAZARD IDENTIFICATION**

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### **5.1. RISK ASSESSMENT**

The work plan for each CTO task is reviewed in accordance with CLEAN II SOP 4.1.1, "Job Hazard Analysis" to identify the hazards that are likely to be present during the task. This review identifies the hazards which are likely to be present and which require control measures. If additional hazards not identified at the time of initial plan preparation are discovered, the Health and Safety Supervisor shall prepare a supplemental hazard assessment. A summary of the Job Hazard Analysis is presented in the site-specific health and safety plan supplement.

### **5.2. SIGNIFICANT HAZARDS**

The hazards identified for the task that are considered significant either because of the probability of occurrence or due to the serious effects are identified in the supplement. Hazards considered well known or routinely experienced at military installations and during environmental investigation are discussed in detail in Section 6 of this plan. Hazards unique to work at specific sites are described in the site-specific health and safety plan supplement.

## Section 6

# HAZARD ANALYSIS

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### 6.1. GENERAL

This section presents a hazard analysis and more detailed discussion of generic hazards experienced at typical program sites during field activities. This section also provides general hazard analysis of industrial hazards encountered on a task-specific basis as Table 6-1, "Industrial Hazards at CLEAN II Program Sites."

### 6.2. RISK ANALYSIS

In addition to the safety hazards on-site that result from industrial and military operations and the hazards associated with equipment used to perform the task, a potential health hazard arises from exposure to organic and inorganic chemicals, physical agents, and biological agents which are unearthed or released during the work

The exposure incident determined most likely to occur as a result of Project activities at sites is contact with contaminated groundwater. The next most likely incident is the spilling of or contact with a subsurface product layer encountered in the investigation.

Incidents not associated with Program activities that may occur at the site include fire events, chemical releases, or explosions associated with military operations. Emergency actions as a result of incidents associated with Program operations or host facility operations are described in Section 16 of this document.

Based on the preliminary site investigation and the project description, many potential hazards associated with Bechtel's scope of work have been identified. These hazards include physical, radiation, vibration, industrial, chemical, landfill decomposition gases, and biological hazards. Each of these classes of hazard is discussed in the sections that follow.

### 6.3. PHYSICAL HAZARDS

The physical hazards associated with the CTO project include noise; heavy equipment operation; falling, slipping, and tripping; manual lifting; heat stress; working over water, and fire or explosion hazards. Physical hazards are discussed in the following sections.

### 6.3.1. Noise

Working proximate to the drill rig can subject workers to noise exposures in excess of allowable limits. Nonessential personnel who do not need to be next to loud equipment should stay as far away as possible to lower the risk of noise-induced hearing loss. Personnel who operate or must work next to the drill rig shall be required to wear hearing protection (ear plugs or muffs) to reduce their exposure to excessive noise. Persons who enter areas in excess of 85 dBA will be required to wear ear protection. Methods used to comply with OSHA hearing conservation requirements are set forth in CLEAN II PP HS 3.3, "Hearing Conservation."

Subcontractor personnel shall implement equivalent effective hearing conservation programs in accordance with Program requirements.

### 6.3.2. Energized and Rotating Equipment

In all cases, heavy equipment with rotating shafts or gears shall be guarded to prevent accidental contact. In some cases, where rotating parts cannot be adequately guarded, only experienced operators are allowed to work around these rotating parts. Personnel who must work around rotating equipment shall not wear loose fitting clothes that could get caught. Special precautions should be observed during drilling operations involving casing removal to avoid potential accidents due to equipment failure or breakage.

Program personnel will not operate or handle drilling equipment or heavy equipment owned by subcontractors. The drilling subcontractors will maintain and implement safety procedures according to their health and safety plan. Only qualified subcontractor personnel shall operate heavy equipment during field activities. Subcontractors shall maintain in operating condition all appropriate safety devices on all machinery and rotating equipment (e.g., back-up alarms, emergency stops, guards) at all times. Subcontractors shall implement effective safety programs for use of this type of equipment.

### 6.3.3. Vehicle and Heavy Equipment Operation

Vehicles shall only be operated in authorized areas. When moving equipment, caution should be exercised so as not to damage equipment or cause injury. When backing up heavy vehicles (larger than pickup trucks), passenger vehicles, or pickups with obscured rear vision, a guide shall be used to direct the vehicle. Extra caution shall be exercised during vehicle operation on dike roads, industrial areas, and other close spaces. Personnel directing traffic shall wear orange vests. Each vehicle shall be equipped with a minimum of one 3A:40B:40C rated fire extinguisher. Refer to SOP 5.1.7, "Vehicle and

Heavy Equipment Safety" for vehicle inspection and documentation requirements.

#### **6.3.4. Subcontractor Furnished Equipment**

The subcontractor is responsible for proper and safe operation of all equipment they bring to the site. Program employees will not operate subcontractor-furnished equipment unless that equipment is expressly provided for use of Program personnel. This section does not prohibit use of power from subcontractor-provided generators or the handling of drilling tool components such as samplers.

#### **6.3.5. Steam Cleaning Equipment**

Eye and face protection shall be used by steam cleaner operators. Only qualified personnel trained in the safe operation and maintenance of such equipment shall be authorized to use the steam cleaner. Subcontractors operating such equipment shall include safety precautions in their code of safe practices.

#### **6.3.6. Falling, Slipping, and Tripping**

Work zone surfaces shall be maintained in a neat and orderly state. Foot traffic shall avoid areas where materials are stored on the ground. Tools and materials shall not be left randomly on surfaces where not in direct use. The drilling crew supervisor shall assure that the work area around each drilling operation is maintained in a neat and orderly state. Hoses and cables shall be grouped, routed to minimize hazards, and covered with a ramp or bridge or clearly marked with hazard tape or flags if such material will remain in place for more than one shift.

#### **6.3.7. Manual Lifting Techniques**

During any manual material handling tasks, personnel shall be trained to lift with the force of the load suspended on their legs and not on their backs. An adequate number of personnel or an appropriate mechanical device must be used to safely lift or handle heavy equipment. When heavy objects must be lifted manually, workers shall keep the load close to the body and shall avoid any twisting or turning motions in order to minimize stress on the lower back. The SHSO can provide a lifting orientation and specific back stretching and warm-up exercises to help minimize the potential for back injuries. Use of these exercises by all field personnel at the start of each shift will be encouraged by the SHSO.

**6.3.8. Extreme Heat and Heat Stress**

Heat stress may become a significant risk factor when ambient temperatures are high and field personnel are involved in physical activity. Personnel should be aware of the symptoms of heat stress so that treatment can be provided immediately should heat stress occur. Signs and symptoms of heat stress are discussed in SOP 5.1.17, "Heat Stress Control and Evaluation". The SHSO shall initiate a heat stress monitoring program whenever personnel are wearing semipermeable or impermeable protective clothing and the outside temperature reaches 70°F or above 90°F in street clothing.

**6.3.9. General Physical Hazards**

The site may include ditches, areas that are poorly drained, rough or uneven terrain, depressed areas (which may present oxygen deficiency or flammable gas collection areas), protruding objects, and impalement hazards. The SHSO shall assure that a careful prework walkover is made of all work areas and potential access or egress routes. Unsafe areas may be flagged or taped by the SHSO and will be identified to all personnel.

**6.3.10. Work Over or Near Water**

Work over or near water where there is a potential for employees to fall in and the danger of drowning exists will be conducted in accordance with the requirements of applicable OSHA standards and USACE EM 385-1-1. Work within 15 feet of unobstructed access to water shall be deemed to be within the requirements of this section. Except where employees are protected by continuous guardrails, safety belts, or nets, the requirements in Section 18.5 shall be met by all personnel.

**6.4. RADIATION HAZARDS**

Program workers may be exposed to a variety of physical radiation hazards when working in the military site environment. Radiation hazards will be evaluated and controlled in accordance with PP HS 6.2 "Radiation Protection" and subordinate SOPs.

**6.4.1. Ionizing Radiation**

Ionizing radiation arises from nuclear isotopic sources, such as radiography cameras and radium devices (buttons, plaques, needles) and from energized sources such as x-ray machines, accelerators, and high-voltage equipment. Some burial sites may have contamination with ionizing radiation sources. Where review of site history reveals the potential for ionizing radiation, the

Health and Safety Supervisor shall consult with the Program Health Physicist to develop a radiological control evaluation plan.

#### **6.4.2. Nonionizing Radiation (RF)**

Nonionizing radiation arises from military communication, radar, and other sensing devices. Particularly intense fields may be experienced around some operational equipment such as antennas, operational aircraft, and vessels. Where the potential for nonionizing radiation fields in the work area are identified, the Health and Safety Supervisor will consult with the Program Health Physicist to evaluate the hazard to Program personnel.

#### **6.4.3. Solar Radiation**

The SHSO will encourage Program personnel working out of doors to utilize covering or sunblock preparations to minimize the harmful effects of the sun's rays on the skin.

#### **6.5. VIBRATION**

Vibration-induced damage may occur when equipment operators handle vibrating equipment or tools for long periods of time. Where use of vibrating equipment is identified, the Health and Safety Supervisor shall be consulted for an evaluation.

#### **6.6. INDUSTRIAL HAZARDS**

Program activities at field sites may expose personnel to various industrial hazards. A summary of the common industrial hazards expected and general methods that will be utilized by the Program to assure worker safety are listed in Table 6-1. A task-by-task analysis of industrial hazards for work to be conducted at the site during the task will be provided in the site-specific health and safety plan supplement.

The SHSO or designee will observe all operations, particularly drill rig operations, to oversee industrial safety hazards such as pinch-points (areas on the drill rigs where limbs or extremities may become caught, mutilated, or dismembered).

To prevent injuries from industrial hazards engineering controls, administrative procedures ( e. g. lockout-tagout procedures) and equipment-guarding techniques will be implemented. Additionally personal protective equipment (PPE) is to be used when engineering controls alone cannot reduce exposure hazards to acceptable limits.

The overall risks posed by industrial activities associated with cleaning, decontamination, excavation, vehicle operation, and earth drilling activities are considered greater than those posed by potential exposure to chemicals that are the subject of investigation when proper PPE practices are followed; therefore, compliance with safety rules and procedures is of equal or greater importance than compliance with health rules.

#### **6.6.1. Underground Cables**

Buried underground cables may be present at this site. Before drilling, an underground utility check will be performed. In addition, where records are inadequate or questionable, a utility search using specialized cable-detection equipment will be performed. Hand boring will be utilized to locate cables when their presence is suspected. SOP 5.1.4, "Utility Clearance" and site activity safety requirements set forth the detailed requirements for obtaining clearance to excavate, drill, or otherwise perform soil-intrusive activities at the site.

#### **6.6.2. Oxygen Deficiency**

Oxygen deficiency can occur in confined spaces, open test pits or low-lying areas as a result of displacement by another gas (marsh gas, chemical decomposition, or leaking gas cylinders), or by the consumption of oxygen by chemical reaction (rust). The SHSO shall monitor all suspect areas prior to initial entry into test pits, depressions, or low-lying areas. The SHSP supplement will specify the frequency of monitoring during subsequent entry.

#### **6.6.3. Low-Lying Areas**

Where large depressed areas must be entered and where a case-by-case site hazard evaluation has determined the potential for toxic or oxygen-displacing gas buildup exist and monitoring cannot be performed prior to entry to the area, the entry team shall carry an oxygen/LEL/hydrogen sulfide detector and PID gas detector. A backup rescue team equipped with SCBA equipment shall be on standby for those sites where the potential for hazardous atmosphere is considered present.

#### **6.6.4. Chemical Handling**

Chemicals brought into the field by Program personnel or activity support personnel may be used for activities such as decontaminating surfaces and equipment, killing weeds or pest control, waste treatment, and/or encapsulation. Hazards associated with these chemicals may include the following.

- Possible oxygen deficiency if used in areas with poor ventilation
- Chemical burns or irritations
- Toxic exposures
- Fires/explosions

The HSM shall evaluate the need for special chemical-handling procedures during the chemical-use review process.

#### **6.6.5. Drum Excavation/ Sampling**

Buried containers may exist on Program work sites. The discovery of unanticipated buried drums shall be considered an unusual event requiring temporary work stoppage and evaluation. These containers may be encountered during drilling operations and/or excavation tasks when operating over old landfills or dump sites.

Potential hazards of handling buried containers of unknown content include the following:

- Fire/explosion
- Exposure of workers or general public to toxic, corrosive, and/or flammable chemicals
- Spillage of materials with risk of migration to uncontrolled areas

The activity POC established for environmental matters will be contacted by the SHSO or field team leader. The ROICC will also be contacted.

Typically, buried drums will be evaluated, stabilized (when necessary), and eventually sampled prior to handling and disposal. A specialty subcontractor will be utilized to perform these activities. Drum handling shall be in accordance with USACE EM 385-1-1 Section 28.H, "Handling Drums and Containers."

#### **6.6.6. Soil Excavation/Trenching**

Excavation of contaminated soil presents multiple hazards to workers including chemical exposure, fire and explosion hazards, and exposure to hazards of contacting unidentified energized utilities.

SOP 5.1.4, " Utility Clearance, " and site activity safety requirements described in the site-specific health and safety plan set forth the detailed requirements for obtaining clearance to excavate at the site.

**6.6.7. Confined Space Entry**

Confined spaces, including but not limited to trenches, ditches, holes, culverts, structures, and tanks, presents multiple hazards including oxygen deficiency, toxic agent exposure, heat stress, engulfment, and other hazards.

Confined space entry is not generally authorized for Program personnel. Confined space entries will be made in accordance with a specific confined space entry permit approved by the HSS. A designated "OSHA competent person" for confined space work shall be on-site during all confined space entry activities.

Detailed confined space entry procedures are set forth in SOP 5.1.2, "Confined Space Entry."

**6.6.8. Overhead Electrical Hazards**

Overhead cables may be present on sites. Refer to SOP 5.1.8, "Electrical Safety," for details. A detailed hazard analysis shall be prepared by the subcontractor in accordance with SOP 4.1.1, "Job Hazard Analysis" prior to operating heavy equipment (drilling rigs, excavators, cranes) underneath or within 20 feet of the maximum reach of the equipment, considering equipment failure, of overhead electrical hazards or switch gear.

**6.6.9. Fire and Explosion Hazards**

The potential for high Total Petroleum Hydrocarbon (TPH) concentrations or flammable concentrations of other materials developing where soil-intrusive work is occurring may exist. Care shall be taken to assure that explosive mixture monitoring is performed in an adequate manner and that ignition sources are controlled or eliminated in accordance with the ROICC or designated installation safety coordinator requirements.

**6.6.10. Pipelines**

Overhead and buried pipelines containing natural gas and petroleum fuels are common on military installations. These pipelines present another source of a potential fire and explosion hazard. All work areas will be cleared by the ROICC or designated installation safety coordinator or operating area safety coordinator prior to soil-intrusive work or movement of heavy equipment into or through utility corridors. Project personnel will obtain written clearances in accordance with SOP 5.1.4, "Utility Clearance," and site activity safety requirements that set forth the detailed requirements for obtaining clearance to excavate at the site. In addition, when locations of buried lines are uncertain, excavation shall always be performed by hand until the utility is located or the

area is cleared. The responsible installation operations or maintenance department will review the location of emergency shutoff valves with project personnel at the prejob meeting or tool box safety meeting prior to working in an area of concern.

**6.6.11. High-Pressure Hose**

High pressure hose ends may whip if the fitting become disconnected. All hose ends shall be secured to minimize whipping and connections should be secured to prevent accidental disconnects.

**6.6.12. Suspended Loads**

Work is not permitted under suspended loads during lifts. Accessible areas under suspended loads shall be barricaded where feasible.

**6.6.13. Static Electricity**

Static electricity may build up from pouring of fluids or other activities. Personnel shall be informed of potential sources of static buildup. Grounding shall be used during fuel transfer and other potential static-producing activities in the vicinity of potentially hazardous environments.

**6.6.14. Unstable or Steep Terrain**

Extreme caution shall be used when moving heavy equipment over steep terrain. The advice of a soils engineer should be obtained before working or crossing potentially unstable terrain.

**6.6.15. Work Near Roadways**

Traffic control shall be implemented in accordance with installation requirements or the "Manual of Traffic Controls for Construction and Maintenance Work Zones." Employees performing traffic control shall wear orange garments in the daytime and reflectorized garments after dusk. Work near roadways will be halted during periods of heavy rainfall.

**6.6.16. Welding and Torch Cutting**

Welding shall not be conducted without permit or approval of the ROICC or designated installation safety coordinator. Welding shall not be conducted over a borehole without a special procedure approved by the Health and Safety Supervisor.

**6.6.17. Work from Elevated Platforms**

Work from elevations greater than six feet shall require fall-protection devices.

**6.7. CHEMICAL HAZARDS**

This section describes the toxicological (health) hazards associated with exposure to organic and inorganic chemicals and metals during the project. A tabulation of chemicals and metals typical of military installation environments and potentially expected to be present at the site is provided in the site-specific health and safety plan supplement.

Particular chemicals commonly encountered are discussed in the following sections.

In dry, arid, desert conditions, exposure may occur principally by inhalation of contaminated particulates. Exposure to vapors can occur if trapped volatiles are exposed to the high heat conditions once the material is exposed to the atmosphere.

**6.7.1. Benzene**

Benzene is a common constituent of motor fuels, aviation gasoline, and some industrial solvents. Benzene is a known human carcinogen. Benzene is the principal concern and the basis for establishing of the action levels for continuous monitoring equipment in the vicinity of gasoline and other light distillate products. Continuous organic vapor monitoring will not detect benzene specifically; therefore, the action level is based upon the conservative assumption that the benzene content of the volatile mixture is less than 20 percent. The action level for respiratory protection may be revised once the airborne contaminant environment is fully characterized. The use of benzene specific detector tubes or portable gas chromatography may be used to quantify benzene concentrations.

In the event that the presence of benzene is confirmed to be above the OSHA action level, SOP 5.1.18, "Benzene Regulated Areas," will be implemented.

**6.7.2. Flammability**

The possibility of flammable vapors from high concentrations of volatile petroleum hydrocarbons in groundwater or from a layer of free product exists at field sites. Accordingly, monitoring will be conducted in accordance with SOP 4.4.4, "Explosive Gases and Flammability Monitoring," to identify locations where the possibility may exist of triggering flammable vapors from sparks generated by equipment.

**6.7.3. Unidentified Chemicals**

Chemicals not identified or considered may be present at field locations. Until initial sampling, analysis, and atmospheric characterization are complete, site work shall be conducted in level B protection if the action level for uncharacterized mixtures is exceeded. A conservative action level based upon total organic vapor monitoring will be utilized during field work. Prior to starting site work, the HSS will attempt to determine what hazardous chemicals and other hazardous materials have affected the subsurface environment in the vicinity of the site work.

**6.7.4. Hydrogen Sulfide**

Hydrogen sulfide is a colorless, heavier-than-air gas with a characteristic odor. Hydrogen sulfide (H<sub>2</sub>S) can be toxic or fatal if inhaled in high concentrations. Processing of crude oil results in the collection of H<sub>2</sub>S in process equipment. A process upset or equipment failure can result in the release of high concentrations of H<sub>2</sub>S to the environment. For this reason, when work is conducted in the vicinity of operations (refineries, petroleum extraction wells, or other processes) that have potential for significant hydrogen sulfide releases, site health and safety personnel should establish a method of communication with the operator of the source. An H<sub>2</sub>S monitor may be maintained at the field work location, if the potential for a significant release is present. Monitoring equipment or detector tubes shall be utilized in the event a hydrogen sulfide release is suspected.

**6.7.5. Lead**

Lead may be encountered as a contaminant of soil in locations near tanks and other process equipment as a result of painting operations. Lead may also be encountered as a result of spills or leakage of lead additives to motor fuels. Lead is a toxic heavy metal and a suspected carcinogen. Lead may be encountered in inorganic or organic forms.

Where lead is identified as present in sufficiently high concentrations, work will be conducted in accordance with the applicable OSHA standards.

**6.7.6. Mercury**

Mercury may be encountered as a contaminant of soil in locations near process equipment, tanks, and lines. Mercury was extensively used as a gauge fluid. Breakage of gauges may have resulted in spillage of mercury and soil contamination. Mercury is a toxic heavy metal.

Mercury is volatile at room temperature and may present an inhalation hazard even if no soil disturbance is occurring. Areas suspected of mercury contamination will be screened before work begins either by chemical sampling or with a mercury vapor meter. Respiratory protection appropriate for the level of mercury present will be utilized.

**6.7.7. Asbestos**

Asbestos may be a contaminant of soil in locations near overhead pipe racks, process areas, former process areas, or where fill has been imported. Asbestos occurs in soil as a result of deterioration of insulation that contained asbestos. Asbestos occurs as a common constituent of many manufactured products. Often the presence of asbestos cannot be ascertained by visual inspection. Among the products that contain asbestos are pipe, bricks, flooring, friction products, coatings, insulation, plastics, and textiles.

Asbestos is regulated as a carcinogen in accordance with OSHA. Work in areas where asbestos is present shall be evaluated by the Health and Safety Supervisor, and as applicable, OSHA regulatory requirements will apply to the work.

Program work in known or suspected asbestos-contaminated areas shall be in accordance with PP HS 6.1, "Asbestos Sampling, Handling, and Associated Work," and subordinate SOPs.

**6.7.8. Arsenic**

Inorganic arsenic may be found in areas where certain industrial residue may have contaminated soils. Arsenic may also be found in areas where arsenic was used as a herbicide. Some arsenic compounds may release a toxic gas when in an acidic environment. Arsenic is a toxic heavy metal. Inorganic arsenic is regulated by OSHA as a carcinogen.

**6.7.9. Polynuclear Aromatic Hydrocarbons (PAH)**

Polynuclear aromatic hydrocarbons are produced from coal tar and other sources and are used in a variety of industrial products. Polynuclear aromatic hydrocarbons or PAHs are recognized human carcinogens. Exposure by any

route to PAH and other recognized human carcinogens shall be maintained at the absolute practicable minimum level.

#### **6.7.10. Polychlorinated Biphenyls (PCB)**

Polychlorinated biphenyls or PCBs, also referred to as Arochlors are synthetic industrial product, which have been commonly used as a cooling fluid and electrical insulator. PCB's are common contaminants of oily type waste, are found around railroad tracks and in industrial areas and dumps. PCBs are recognized environmental pollutants and suspected human carcinogens. Work involving exposure to PCB above the atmospheric action level or in contact materials exceeding 100 micrograms per gram may require special medical evaluation and approval of the Program Health and Safety Manager.

#### **6.7.11. Other Heavy Metals**

A variety of heavy metals are encountered as contaminants at industrial military sites. Some heavy metals are highly toxic; others are also recognized human carcinogens. As these materials are not volatile, unless highly heated; thus control by proper use of PPE and personnel hygiene practices will prevent significant exposure to heavy metals.

#### **6.7.12. Chlorinated Solvents**

Chlorinated solvents have been widely used at industrial and military sites in large quantities and may exist in free product layers at some sites. Chlorinated solvents present a wide range of toxic modalities, with certain compounds being highly toxic and others being essentially inert. Chlorinated solvents are often identified by a familiar characteristic odor. The PID or FID used for field monitoring has reduced sensitivity (response factor) for some chlorinated hydrocarbons. The use of detector tubes, halide monitors, or other methods may be utilized for detection. Sensing of the characteristic odor is an indication of the need to upgrade respiratory protection and initiate personnel monitoring.

#### **6.7.13. Dioxins**

Dioxins are produced in industrial processes as contaminants in production of herbicides and as by-products of combustion of chlorinated hydrocarbons, particularly PCBs and trichlorobenzene. Dioxins are considered highly toxic and are suspected carcinogens, even in trace quantities. Sites where dioxin is potentially present include waste dumps used to dispose of pesticide, areas of ground that have experienced fires, and areas of electrical equipment or electrical maintenance shops that have experienced fires. Project work where

dioxins are present requires approval of the Program Health and Safety Manager.

#### **6.7.14. Carcinogens**

Carcinogens are any chemicals or products capable of causing or inducing cancer or leukemia in humans. Carcinogens are classified, for Program purposes, based upon OSHA, ACGIH, IARC or NTP classifications into recognized or confirmed human carcinogens (Class I), suspect human carcinogens (Class II), questionable carcinogens (Class III), or not recognized as carcinogenic. When recognized or suspect carcinogens (Class I or Class II) are identified in work areas, they will be identified in the site-specific health and safety plan supplement as such. Exposure by any route to recognized human carcinogens without published exposure limits shall be maintained at the absolute practicable minimum level.

#### **6.7.15. Nonaromatic Hydrocarbons**

Nonaromatic hydrocarbons refer to a variety of volatile and semivolatile compounds, including simple hydrocarbons such as propane, pentane, and octane. These unspecified compounds are present in petroleum hydrocarbon mixtures and may exist as gas, vapor, liquid, or some combination. The compounds are generally of low toxicity; however, they produce a narcotic effect at moderate concentrations. Exposure to nonaromatic hydrocarbons at these concentrations may affect the operators ability to operate machinery. The low toxicity of these materials is not a basis for allowing exposures in excess of established limits.

#### **6.7.16. Simple Asphyxiants**

Work in the presence of large quantities of these materials (compressed or liquefied) shall be conducted with great care. These materials include low-toxicity hydrocarbon fuels ( methane, ethane, propane, butane ) , welding cover gases ( argon, helium, carbon dioxide), and nitrogen. These materials displace oxygen and, if present in large quantities or in confined spaces, produce unconsciousness, asphyxiation and death.

Helium and hydrogen are simple asphyxiants that may also affect the reading some explosive limit instruments due to high thermal conductivity. Excess nitrogen may similarly effect the reading of explosive-limit monitoring instruments by reducing the oxygen present for combustion.

**6.7.17. Chlorine Gas**

Chlorine gas cylinders are common around industrial and military sites, particularly in water treatment plant areas. Chlorine is highly toxic, and even exposure to low concentrations may result in permanent lung damage. Entry into or work in proximity to chlorine gas storage requires special procedures, including the use of emergency escape respirators.

**6.7.18. Pesticides**

Pesticides potentially used or disposed at Program sites range from relatively low-toxicity products to highly poisonous compounds. Exposure to extremely small quantities of some pesticides may result in serious bodily harm, even death. Identification of pesticide containers during field activity requires evaluation by the HSS before work can proceed. Presence of pesticide dumping at a site requires that protective clothing protocols be implemented during all intrusive activity. Presence of residue only following normal application may permit a reduced level of PPE.

**6.7.19. Photographic Chemicals**

Photographic chemicals include a broad range of products including heavy metals, cyanide, skin sensitizers, irritants, and carcinogenic materials. Cyanide compounds can release toxic hydrogen cyanide gas in acidic environments. Accordingly, extreme caution should be exercised when using acid to preserve samples where cyanide may be present. Protective measures are the same as for sites that present a mixture of wastes. Where photographic chemicals may be present, the types and formulations should be determined, if possible, prior to field activity.

**6.8. LANDFILL DECOMPOSITION GASES**

Decomposition of organic materials results in the production of several gases that may present a health and safety concern.

**6.8.1. Vinyl Chloride**

Vinyl chloride results from the decomposition of chlorinated materials such as plastics and solvents. Vinyl chloride is a recognized human carcinogen. The OSHA standard for Vinyl chloride established an exposure limit of 1 ppm as a time-weighted average and 5 ppm as a short term exposure limit (15 minutes). Where measured concentrations may exceed 10 ppm, only a Type C airline or SCBA unit may be used for respiratory protection. When negative pressure air filtering respirators are utilized, the air filter cartridges shall be replaced daily.

**6.8.2. Methane Gas**

Methane gas may be encountered as a result of biological processes in soil during excavation activities. Methane is an explosive hazard and can displace oxygen in confined space entry work. Methane will be monitored for as an explosive gas. PIDs do not detect methane; therefore, either a FID or explosimeter will be used where a potential for methane gas is identified.

**6.8.3. Hydrogen Sulfide**

Hydrogen sulfide (H<sub>2</sub>S) is a colorless, heavier-than-air gas with a characteristic odor. Hydrogen sulfide is commonly found at landfills. It can be toxic or fatal if inhaled in high concentrations. Monitoring equipment or detector tubes shall be available for confined space or trench entry and in the event hydrogen sulfide is suspected. This chemical has the property of numbing the olfactory senses after a brief exposure which limits the usability of air-purifying respirators (APRs). APR protection shall only be used if monitoring equipment is continuously available. Where H<sub>2</sub>S is experienced above 10 ppm, personnel shall carry either industrial gas masks or escape respirators, and alarming monitors.

**6.9. BIOLOGICAL HAZARDS**

The SHSO shall screen the area for biological hazards during the initial site visit and shall discuss any problems with installation personnel during the pre-work review. Multiple biological hazards are present at the site. The most common hazards anticipated are discussed below.

**6.9.1. Rattlesnakes**

Personnel should be extremely careful when walking through tall grass, rocks, or debris. If a rattlesnake is encountered, slowly and quietly back away from the snake. Inform all personnel at the site of its location. Do not attempt to move or kill a snake as certain species of rattlesnake are protected under state and federal laws. In the event of a snakebite, immediately summon emergency medical services and notify the SHSO. In the event of snakebite, do not try to move the affected limb; wait for transportation. The venom should be wiped off the skin as venom will attack intact skin. Refer to Section 16 for precautions on use of snakebite kits.

**6.9.2. Insects**

Bees, wasps, yellow jackets, black widow spiders, scorpions and brown recluse spiders present a potential hazard on this project as they would under

any circumstances, but especially so for those individuals sensitized to those bites or stings. Prior to initial assignment on this project, personnel with known allergic responses to insect stings will be identified and field supervisors made aware of this condition. These personnel shall also carry an antidote kit if so advised by their physician. The Bechtel SHSO will confirm that the antidote kit is accessible and notify the emergency medical service providers in the event of any incident.

In all cases, a victim suspected of being bitten by a black widow spider or brown recluse spider, or stung by a scorpion shall receive medical attention. The venom from the brown recluse spider is capable of causing coma and kidney failure in its victim.

Protection against insects, such as protective clothing, repellents, extermination, and training in recognition and identification of harmful insects may be employed.

### **6.9.3. Ticks**

Ticks transmit many diverse etiologic agents. Diseases transmitted by tick include Lyme disease, Rocky Mountain Spotted Fever, and other viral and rickettsial diseases.

Lyme disease is a spirochete-type bacterial infection that is transmitted to humans and some animals by two species of tick. The deer tick is probably the more prevalent. The female is approximately 1/4 inch long and is black and red in color. Symptoms of Lyme disease include chills, fever, headache, fatigue, stiff neck, and bone ache. Lyme disease presents itself as a rash with a small welt in the center.

Symptoms of Rocky Mountain Spotted Fever include chills, fever, headache, fatigue, stiff neck and bone ache. Spotted fever presents as red spots under the skin.

Ticks are normally found in wooded and bushy areas. When walking through tall brush areas, periodically check yourself and your coworkers for presence of any ticks. Ticks burrow into the skin. It is essential to remove the entire tick as soon as it is found. If the head cannot be removed, medical treatment shall be obtained. Should severe signs of infection or fever develop, the patient should seek prompt medical care.

### **6.9.4. Poisonous Plants**

Poisonous plants may be present at the site. Poison ivy, poison oak, and poison sumac are identified by three leaves or five leaves emanating from a stem. The plants contain a resin that causes a delayed allergic hypersensitivity

reaction on contact. The resin is active in live, dead, dry and burned plant parts, and it may be carried through the air. Signs and symptoms are usually evident within 24 to 48 hours after exposure. These include burning, stinging, and blisters. Notify the SHSO if these plants are observed. If exposure or contact occurs, wash the affected area, but do not spread the resin to uncontacted areas.

#### **6.9.5. Vermin**

Rats, mice, squirrels and rabbits are carriers of disease. Where vermin are identified in work areas, the SHSO shall be immediately notified. Bites shall be immediately reported and medical care obtained.

Infections associated with rodent borne disease are present in the southwestern United States. Infections may occur in humans associated with activities that bring humans into contact with rodents, rodent saliva, or rodent excreta. Activities that may bring humans into contact with the etiologic agents causing infection include the following situations:

- working in areas of field crops;
- occupying previously vacant cabins, buildings, or outhouses;
- cleaning outbuildings;
- disturbing rodent-infested areas;
- visiting areas where rodent populations have increased; and
- entry into crawl spaces or other potential rodent-infested areas.

Transmission of disease may occur through broken skin, contact with conjunctivae, ingestion of contaminated food or water, or inhalation of aerosols. Prevention is through environmental hygiene practices that deter rodents from colonizing the work environment.

Cleanup of rodent-contaminated areas or areas meeting the above criteria shall be performed in Level C protective equipment, including full-face respirator and head covering. Vacuuming or dry sweeping should not be used as this may generate aerosols. Surfaces should be disinfected by spraying with detergent, water, and disinfectant mixture. Reusable protective clothing shall be decontaminated and disinfected daily. Where rodent infestation is positively identified, all waste shall be disposed in double-bagged containers and shall be marked as infectious.

Workers shall be advised of the hazard and risks of the work. Workers shall be advised that if a fever or respiratory illness develops within 45 days of the

potential exposure, they should seek medical attention and inform the physician of potential hantavirus exposure. Rodent-borne diseases include hantavirus, which results in severe respiratory distress and plague

**6.9.6. Marine Life**

Work in shallow bays may expose personnel to a variety of marine hazards. Project personnel shall not wade barefoot while performing project work. Appropriate foot gear includes boots or waders. Free swimming is prohibited.

**6.9.7. Wild (Feral) Dogs**

Wild dogs may attack and may also carry rabies. Their presence shall be promptly reported to the SHSO.

**6.9.8. Viral, Bacterial, and Other Diseases**

Personnel working at field sites may be exposed to other etiologic agents carried by insects. Personnel shall be informed of preventative and prophylactic measures for protection.

Table 6-1

### Industrial Hazards at CLEAN II Program Sites

Industrial Hazards	Methods to Assure Worker Safety
Excessive noise from operating drill rigs.	If noise levels exceed 85 dB, affected workers must don ear protection.
Injuries caused by tripping or falling.	Job site walkover to identify hazards. Employees will be trained in housekeeping, and areas will be monitored daily by the SHSO. Immovable trip hazards will be marked or guarded.
Accidents involving power equipment or sharp objects, etc.	Power equipment will have guards or shields, and workers operating equipment will wear face shields or safety goggles, as prescribed by the SHSO. Power equipment must have UL-approved tags. Sharp objects will be kept out of the work areas unless needed for the task. If possible, sharp corners or edges will be wrapped with high-visibility tape.
Electrical shock.	All electrical equipment will be grounded. All power supplies for portable electrical tools and hand lighting shall be protected by installed or portable Ground Fault Circuit Interrupt (GFCI) Protection. Lock-out tag-out procedures will be employed before work on electrical equipment begins.
Fires.	Fire extinguishers will be maintained on each vehicle and in regular work areas. Workers will be trained in fire extinguisher use and for notification of fires. Smoking will be permitted only in a designated area at the site.
Explosions.	During drilling activities where potential hazards exist, explosive gas meters will be used to monitor the area.
Mutilation from drill-rig pinch points.	The SHSO will inspect all drilling equipment before use. Areas that cannot be guarded that represent a hazard will be discussed with the workers prior to the start of work.
Chemical releases, fires, or other disturbances at site.	The SHSO will maintain communications contact with personnel at any potential source of toxic gas release. Hydrogen sulfide monitors or other appropriate monitoring equipment will be maintained on-site.
Skin and eye irritation from contact with chemicals.	Workers will not be allowed to work with chemicals without proper PPE. The SHSO will determine the correct PPE needed for the task and will assure the worker has been trained and is aware of the material safety data sheet (MSDS) provisions.
Stinging insects such as wasps, bees, wild animals.	During the prework walkover of outside task locations, the SHSO will identify any areas that could subject workers to stinging insects. The SHSO will determine the actions needed to rectify the problem. Workers will not be allowed to work near insects where an unreasonable risk is presented.
Lifting, manual labor	The HSS or SHSO will identify ergonomic factors and will develop ameliorative measures to prevent untoward effects. Back protection, lifting techniques, and warm-up will be used prior to strenuous tasks. Special hand protection will be required where indicated.

Table 6-1

**Industrial Hazards at CLEAN II Program Sites (continued)**

Industrial Hazards	Methods to Assure Worker Safety
Ionizing radiation.	Dosimetry, radiation surveys, contamination surveys.
Non-ionizing radiation.	Establishment of safe work areas, monitoring.
Solar radiation.	Protective clothing or sunblock.
Vibration.	Limitations on intensity and duration of exposure.
Vermin.	Site screening, traps, protective boots.
Wild animals.	Site screening, fencing, traps.
Poison plants.	Site screening, protective clothing, removal, skin creams.
Snakes.	Site screening, protective clothing, first-aid kits on-site.

## **SITE CONTROL**

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### **7.1. GENERAL REQUIREMENTS**

Work conducted at field sites shall implement a site-control program established in accordance with HS PP 5.1, "Field Safety Program," and SOP 5.1.13, "Site Control," based on site-specific characteristics.

### **7.2. SITE WORK AUTHORIZATION**

Site access and work controlled by the CLEAN II Program shall be authorized by either a hazardous work permit or a site-specific health and safety plan. All HWPs shall be obtained in accordance with SOP 5.1.1, "Hazardous Work Permits ." HWPs will be generated and implemented before work begins for each task. The HWP is generated on site by the SHSO, who is most familiar with site conditions. The initial HWP for any task shall be prepared by the organization requesting work and approved by the Health and Safety Supervisor assigned to the task. HWP revisions shall be approved by the field-assigned SHSO and the Health and Safety supervisor in accordance with SOP 5.1.1.

### **7.3. CONTROLLED AREA DESIGNATION**

The plan for controlled area designation is provided in the site-specific health and safety plan supplement. Typically, drilling activities use a site-control plan that provides a single barrier to delineate the clean, uncontrolled areas from the exclusion zone. The exclusion zone also includes a small decontamination area. Trenching activities and drilling activities in heavily contaminated sites will utilize the standard three-zone system of site control as described in SOP 5.1.13.

A separate vehicle entrance will not normally be established for field investigation work. A decontamination station for personnel will be established at the entrance to the work site. Additional stations may be established at each access-control point. Figure 7-1 shows a typical access-control arrangements for field investigations. The SHSO will establish the layout and arrangement of field facilities during mobilization.

### **7.4. ACCESS CONTROL**

Access to controlled areas is accomplished through a program that controls the activities and movements of people and equipment at the project site. Included

in this program are controls for chemical, biological, and industrial safety hazards.

The site-specific health and safety plan supplement will establish the access-control requirements for each site. The following are typical access-control requirements that may be implemented at investigation sites. The SHSO shall monitor implementation of these requirements.

- The SHSO shall maintain an authorized personnel list.
- An access control register will be maintained at the controlled area boundary to record the number and identity of individuals in the area.
- All personnel will sign the access control log before entering the controlled areas and each time upon leaving.
- The entry/exit control point will not be manned during this work.
- Personnel or equipment entering or leaving the site will do so through the site access-control point.
- Personnel decontamination stations are provided and maintained where contact with removable contamination is possible.

An exclusion zone shall be established around each work area prior to the start of soil-intrusive work. The exclusion zones will be posted and physically barricaded if the SHSO so requires based upon site conditions. The site access-control points are typically posted as follows:

**DANGER**  
**Controlled Area**  
**Authorized Personnel Only**

**[Organic Solvent-, Polynuclear Aromatic Hydrocarbon-, Oil-, PCB-, Pesticide-]**

**Waste Contaminated Soils**

(identify the major contaminants present)

**Excavation in Progress** (as needed)

**Level {B/C/D} Protection Required** (as needed)

**7.5. INSTALLATION ACCESS**

Specific requirements for installation access are presented in the site specific health and safety plan supplement. The following information is typically required for access to most military installations:

- Full Name;
- Social Security #;
- Employee's Company ID #;
- Company Affiliation;
- Driver's License # (State of issue and expiration date);

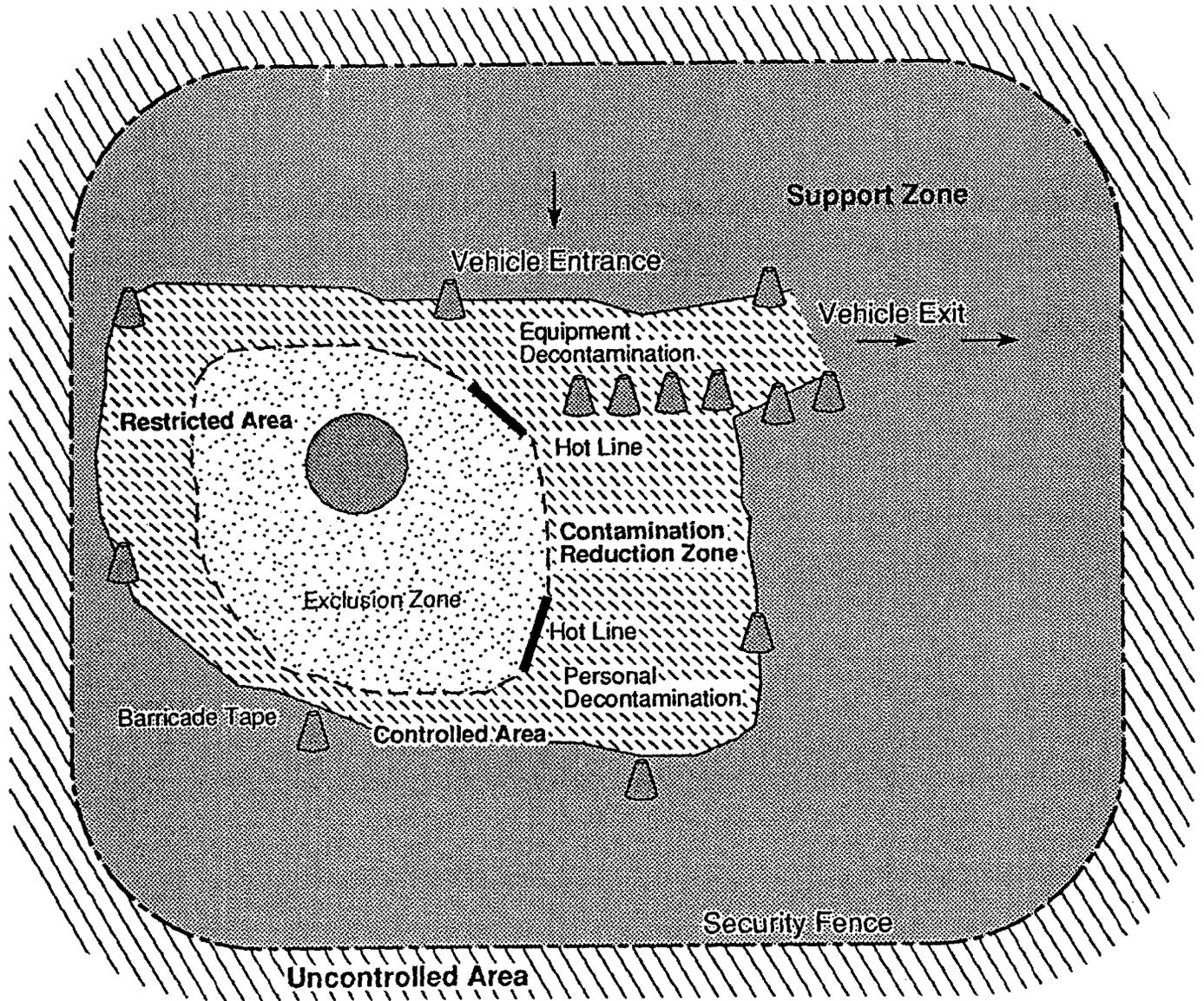
For each vehicle (including heavy equipment, drilling rigs, etc.) requiring Site access, the following information should be available:

- Vehicle make and model;
- License # (State and registration date);
- Primary operator;
- Responsible company affiliation of operator.

An Authorized Personnel Roster is prepared and forwarded to the appropriate activity contact when required by the activity. The task field leader and SHSO shall carry a copy of this roster.

All personnel shall check in at the base or activity gate before accessing any field sites. Security will determine the need for temporary or full pass status. After clearing security, personnel may proceed to the site.

Figure 7-1  
Site Access Control Arrangements



EXPLANATION			
→	Traffic Direction		Restricted Area
	Traffic Cones		Exclusion Zone
—	Barricade Tape		Contamination Reduction Zone
- - -	Security Fence		Support Zone
—	Hot Line		Uncontrolled Area

## DECONTAMINATION

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### 8.1. GENERAL

Decontamination facilities shall be established at each work site. The facilities and decontamination protocol established will vary with the nature and extent of hazards present. The Program will use standard protocols as established in SOP 4.3.1 for most sites. Where necessary, special protocols will be established. Figure 8-1 illustrates the standard order of removal of personal protective clothing. Figure 8-2 describes a standard decontamination facility arrangement for personnel. The site-specific health and safety plan supplement contains superseding diagrams, if a different decontamination scheme is to be utilized.

### 8.2. PERSONNEL DECONTAMINATION

Personnel decontamination will be performed in accordance with CLEAN II PP HS 4.3, "Decontamination," and SOP 4.3.1, "Personal Decontamination." A three-station decontamination system will typically be established for personnel exiting from exclusion zones.

Personnel shall always wash hand and exposed skin areas upon removing protective clothing or leaving controlled work areas.

Visitors shall be provided with written decontamination instructions prior to being permitted on the site.

### 8.3. VEHICLE AND EQUIPMENT DECONTAMINATION

Specific procedures for vehicle and equipment decontamination may be established in site-specific health and safety plans or SOPs for vehicle and equipment decontamination. Standard practices that will be followed on-site are listed below.

- Decontamination of small equipment will be performed at the site using the three-wash system. Gross contamination will be scraped or wiped off equipment before beginning the wash cycle.
- A steam cleaner or pressure washer will be set up on the site for heavy equipment decontamination.
- A vehicle decontamination pad may be constructed to contain and collect all decontamination solutions, where required.

- Large items of equipment will be wrapped prior to transport to the decontamination area specified in the supplement for decontamination.
- Vehicles will be cleaned of gross contamination and loose dirt before leaving the exclusion zone. Vehicles will then exit through the vehicle exit to the vehicle contamination reduction zone (CRZ) for decontamination.

#### **8.4. APPAREL DECONTAMINATION**

Specific procedures may be established in site-specific health and safety plans or SOPs for apparel decontamination. Standard practices will be followed on-site: The SHSO will establish a minimum of one safety apparel decontamination station at the site. As a minimum, soap/detergent, rinse water, towels, wash pans, and brushes for scrubbing boots will be available. Any wastes generated from decontamination will be properly disposed in accordance with the Investigation-Derived Waste Management Plan. After daily field work has been completed, outer protective clothing, where required, will be removed and may either be placed in plastic bags for disposal or retained for future use, depending on the contamination potential.

#### **8.5. SHOWER FACILITY**

Sites at which, due to the nature of the contaminants and potential associated toxicity, showering is deemed necessary, personnel shall be required to shower on-site before donning personal clothing. A shower facility will be established where personnel can don protective clothing, proceed to the work area, return from the work area, shower, and don personnel clothing prior to eating, drinking, or smoking. Shower facilities shall meet applicable OSHA requirements.

#### **8.6. HAZARDOUS WASTE MINIMIZATION PRACTICES**

Personnel entering controlled areas shall minimize generation of waste that may become classified as hazardous. Disposable materials, wrapping, and packaging shall not be brought into controlled areas unless required to prevent cross-contamination. Separate waste containers shall be set up for trash, nonhazardous waste, and potentially hazardous waste.

#### **8.7. TESTING REQUIREMENTS FOLLOWING DECONTAMINATION**

All items and equipment leaving controlled areas are inspected by the SHSO for proper decontamination prior to the material leaving the site. Generally, visual inspection of items used within controlled areas is sufficient to establish adequate decontamination, and items are not tested for chemical

contamination. Testing may be conducted by the SHSO when there is a high probability of contamination that cannot be readily removed by standard decontamination techniques. The site-specific health and safety plan supplement shall specify where testing is required.

A record of inspection following decontamination shall be maintained for heavy equipment based upon visual inspection. Equipment belonging to team subcontractors, other subcontractors, or rental organizations shall be inspected. Equipment that leaves any facility (government property) boundary shall be deemed to be leaving the custody of the Program, unless it is tagged as not decontaminated and is returned to a Program organization that will take responsibility for the decontamination. Such transfers shall be approved by the Health and Safety Supervisor.

#### **8.8. CERTIFICATION OF DECONTAMINATION**

The SHSO shall be responsible for preparing a certificate of decontamination when government-furnished equipment or material used on a site is returned to the custody of the government. This includes the storage location at the San Diego Program office or other locations not prepared to handle contaminated equipment. Forms are available from the HSM for this purpose.

#### **8.9. SUBCONTRACTOR REQUIREMENTS**

Each subcontractor shall decontaminate equipment as necessary to meet technical requirements. Upon completion of final decontamination prior to equipment leaving any facility, the subcontractor shall request an inspection from the SHSO prior to equipment removal from the site and a record of decontamination prepared. Subcontractors are responsible for decontamination to the satisfaction of the SHSO. Equipment includes vehicles, trucks, drill rigs, trailers, and accessories.

##### **8.9.1. Visitor Requirements**

Visitors shall follow the directions of the SHSO regarding decontamination of equipment brought inside controlled areas. Equipment shall be wrapped and taped to the maximum practicable extent, as directed by the SHSO, to minimize the need for decontamination.

#### **8.10. DECONTAMINATION AREA ARRANGEMENTS**

A base area shall be established for waste storage, vehicle and equipment decontamination, emergency supplies, and other necessary equipment. These

sites need not be contiguous, although this configuration may be convenient. The SHSO shall specify the arrangement of the base decontamination facility.

#### **8.10.1. Waste Storage and Decontamination Area**

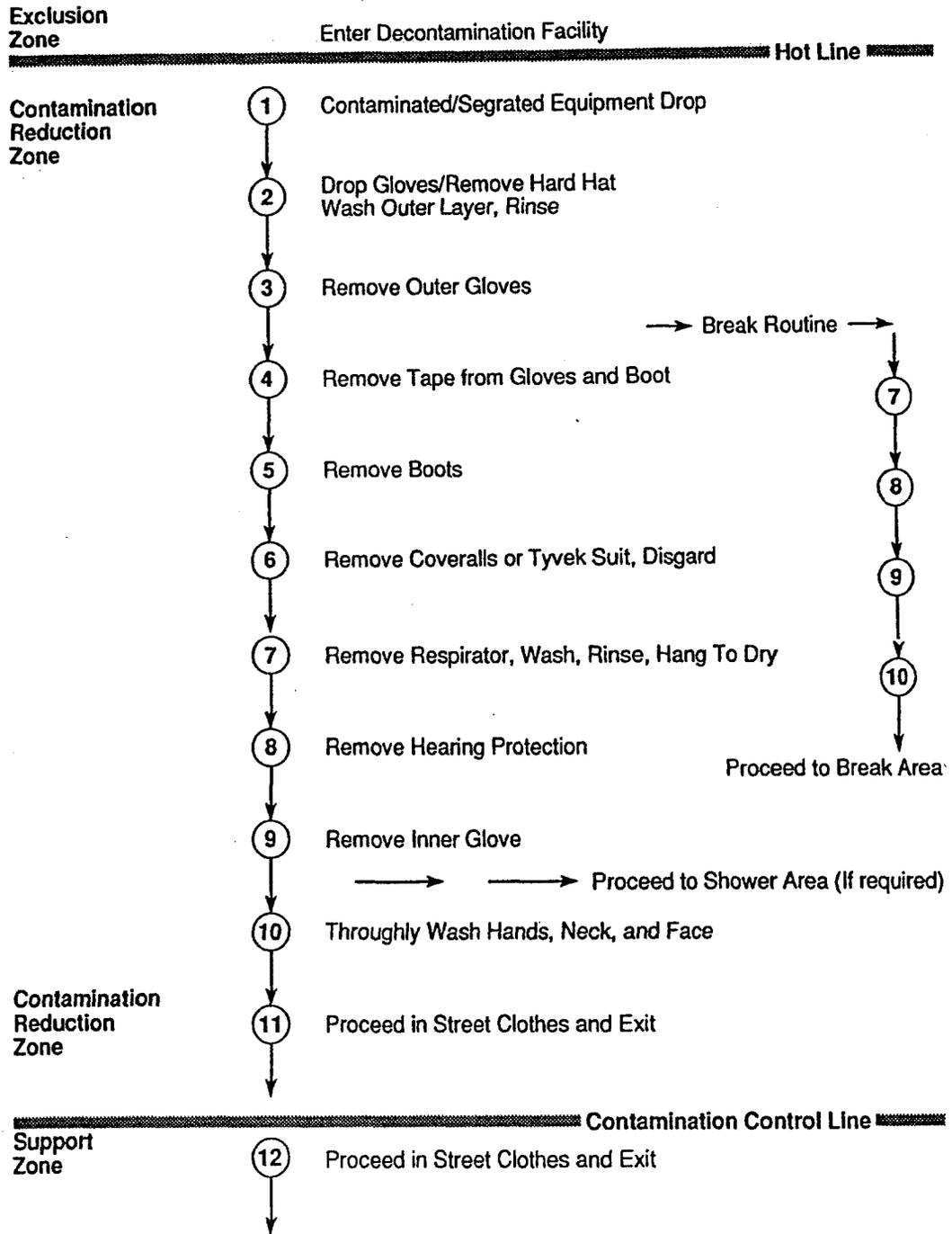
A waste storage area shall be established for temporary storage of spoils, cuttings, other investigation-derived waste, decontamination solutions, etc. This area shall be posted as a waste storage area.

#### **8.10.2. Decontamination Pad**

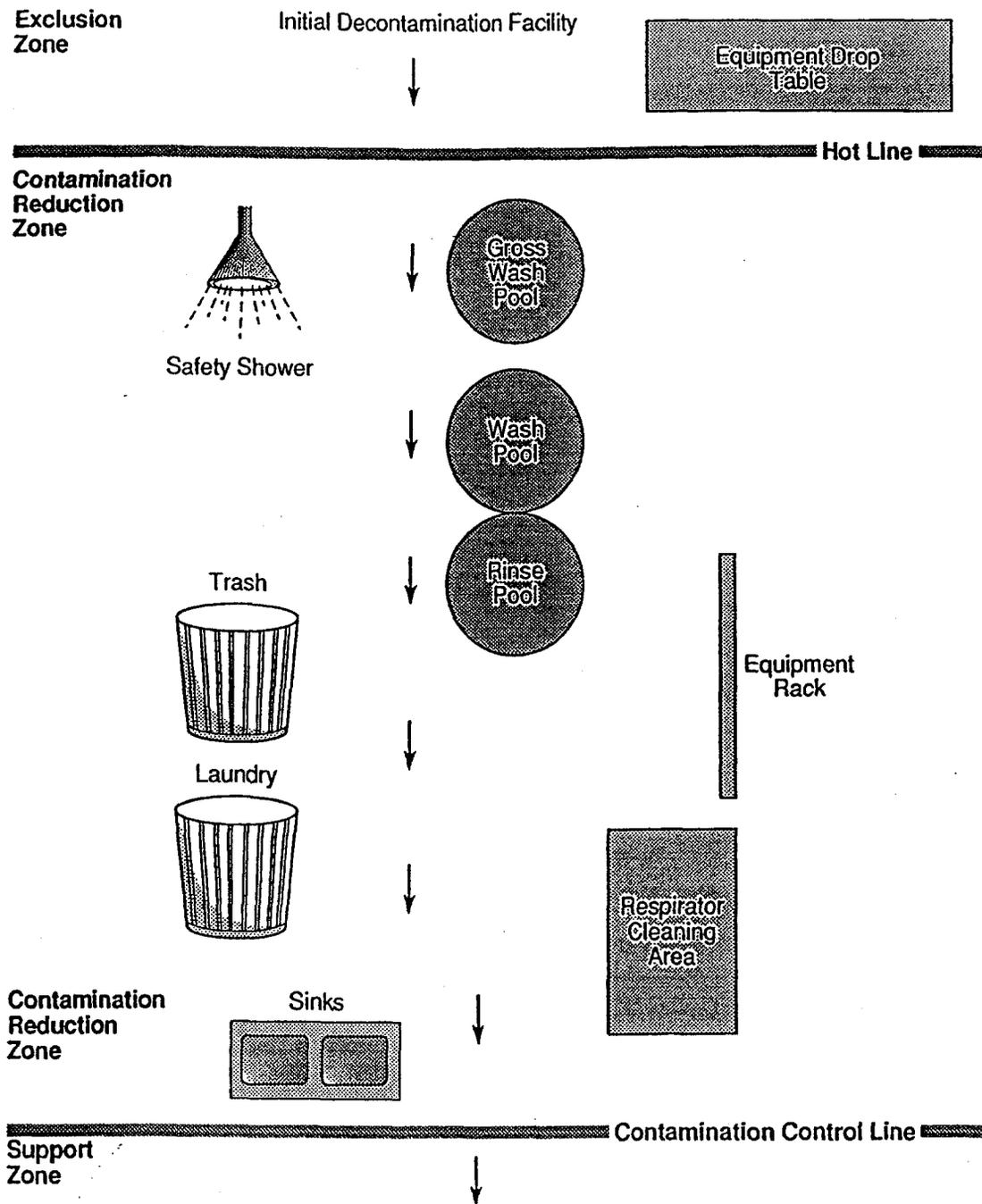
A decontamination pad may be constructed on the site for the decontamination of excavators, drill rigs, augers, and associated equipment. The standard decontamination pad shall be large enough to contain any single piece of equipment with a three foot border on all sides. The pad may be sloped or provided with a movable entry section to contain liquid if built on level ground. A sloped pad with a liquid-collection sump is recommended. The pad shall be constructed of three layers of lapped and taped heavy-duty vinyl or polyethylene (12 mil minimum) covered with a sand or fine gravel layer for protection. The pad shall be operated such that all wash water can be contained and collected within the pad. Alternate construction providing equivalent protection is acceptable.

The pad is not required at sites where wash water is allowed to return to the ground or to a storm sewer discharge. This determination will be made by the activity Environmental Division.

**Figure 8-1  
Personal Protective Equipment Decontamination Flowchart**



**Figure 8-2**  
**Decontamination Area Facility Arrangement**



## **MEDICAL SURVEILLANCE**

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### **9.1. GENERAL**

All CLEAN II Program personnel will be required to participate in their employer's medical surveillance program before being permitted to work on Program field sites. The medical surveillance program for Bechtel employees is described in CLEAN II PP HS 1.3, "Medical Surveillance," and subordinate SOPs. The BC and K medical surveillance programs are described in respective company documents. Subcontractors will be required to demonstrate by document submittal OSHA-compliant programs and to maintain records as required by the applicable contract. Specific exceptions the medical surveillance requirements shall be identified in the site-specific supplement for site access by specialty subcontractors performing nonintrusive activity.

### **9.2. PROGRAM PERSONNEL**

Official copies of all medical surveillance documentation for Bechtel personnel will be maintained at the Program office in order to provide central management and to maintain confidentiality. Medical surveillance records of Bechtel employees performing field work, not assigned to the CLEAN II Program, shall be maintained by the regional office Health Services Supervisor and accessed via the Occupational Health Records Management System (OHRMS) or an equivalent tracking and management system. Medical records of a confidential nature will be maintained by the medical provider or by the employer. The PMO will provide status reports indicating each employee's status and special restrictions.

### **9.3. SUBCONTRACTOR RECORDS**

Subcontractor medical surveillance records are maintained by the subcontractor. Copies of records or a record summary will be maintained by each subcontractor at the work location.

#### **9.3.1. Medical Restrictions**

All Project employees shall immediately inform the SHSO of any medical restrictions or any use of prescription drugs. If the employee desires confidentiality, this information may be forwarded directly to the Program HSM. Any physical limitations based upon medical condition or prescription drug use will be evaluated by the Program medical consultant. Other work restrictions

will be evaluated on a case-by-case basis by the HSM and the employer's safety office.

#### **9.4. SPECIAL MONITORING PROTOCOL**

Special monitoring protocols for specific contaminants shall be specified in site-specific health and safety plan supplements.

#### **9.5. MEDICAL SURVEILLANCE SUBMITTALS**

##### **9.5.1. Subcontractors**

Subcontractors shall certify in writing that personnel are medically qualified in accordance with OSHA standards. Subcontractor shall maintain on site proof of medical qualification expiration dates, work limitations, and respirator use approval by copies of records or a records summary.

## Section 10

# HAZARD MONITORING PROGRAM

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### 10.1. GENERAL

Hazard monitoring will be performed at this site as described below. The hazard monitoring program will be conducted in accordance with CLEAN II PP HS 4.4, "Hazard Monitoring Program," and subordinate SOPs.

### 10.2. RESPONSIBILITY FOR MONITORING

The site health and safety officer will perform or oversee all monitoring performed at field locations for health and safety purposes. The site-specific health and safety plan supplement shall specify the minimum type and frequency of monitoring to be performed based upon the potential hazards present. A monitoring log will be maintained, by location, to document the results of hazard monitoring.

The SHSO will provide results of monitoring to all site personnel on a regular basis and whenever monitoring results indicate that a protective action is required.

#### 10.2.1. Responsibilities of Subcontractors

Subcontractors are required to perform monitoring as necessary to demonstrate compliance with applicable regulations governing exposure to hazardous substances or physical agents. Subcontractors are responsible for providing all monitoring data they collect to the CLEAN II HSM. Subcontractors are required to notify the CLEAN II HSM of any overexposure to hazardous substances or physical agents.

### 10.3. CHEMICAL AGENT MONITORING

Atmospheric concentrations of chemical agents shall be routinely monitored at all field sites. Chemical agent monitoring includes monitoring for all toxic air contaminants, explosive mixtures, and oxygen deficiency.

Monitoring for chemical agents will be performed using instrumentation and sampling apparatus as described in Table 10-1, "Chemical Monitoring Plan." Monitoring methods, frequencies, and responsible personnel are set forth in the site-specific health and safety plan supplement. Sampling techniques and analytical methods are set forth in SOPs. Monitoring instrument use, calibrations, and maintenance are described in applicable SOPs.

**10.4. ENVIRONMENTAL MONITORING**

Environmental monitoring consists of sampling and monitoring measurements performed at the site boundary or other locations for the purpose of establishing off-site or public exposure related to field operations.

Environmental monitoring includes specialized techniques and methods used to provide high sensitivity and specificity for assessment of environmental concentrations of contaminants. Environmental monitoring programs, where required are described in the site-specific health and safety plan supplement.

Environmental monitoring is not typically performed during investigation activities where the potential for significant atmospheric emission is minimal. Where screening measurements performed below indicate potential releases of contaminants beyond the controlled area and where facility personnel are potentially exposed, the SHSO will prescribe measures to control releases. Such measures may include expansion of the controlled area, environmental monitoring to assess conditions, or use of engineering or administrative controls. Environmental monitoring is performed at or beyond the controlled-area boundary.

**10.5. AREA MONITORING**

Area monitoring consists of monitoring performed with respect to a work location without specific reference to any individuals presence in the area. Area monitoring is performed to identify the general potential for individual exposure and to establish the protective equipment requirements for personnel who may enter that area. Area monitoring is conducted to identify exposures above OSHA or ACGIH limits for industrial exposure or EPA guidelines for hazardous waste site activities. Action levels for use of PPE and respiratory protection are based upon area monitoring using standard monitoring instrumentation. Action levels may vary depending on the degree of characterization of the site and the presence or absence of particular constituents. Action levels are above the ambient background as determined off-site or upwind of the site. Area monitoring is performed with field survey screening instrumentation within the controlled area.

**10.5.1. Area Monitoring (petroleum product only sites)**

Area monitoring will be performed at all field sites. Area monitoring is the primary means of decision making with regard to PPE and respiratory protective equipment. The minimum instrumentation for monitoring at petroleum product sites is the PID and detector tube. Basic action levels for PPE and respiratory protection based upon air-monitoring results for sites contaminated with petroleum hydrocarbons only are provided in Table 10-2, "Monitoring Methods and Action Levels for Petroleum Hydrocarbon Only Sites."

**10.5.2. Area Monitoring (unidentified product sites)**

Area monitoring for sites contaminated with unknown contaminants, or mixtures of organic chemicals, and petroleum hydrocarbons, will include a careful initial airborne characterization, followed by specific monitoring techniques, after the constituents are identified and acutely toxic contaminants are ruled out. Table 10-3, "Action Levels for Characterized Mixtures Using Screening Survey Instruments" identifies basic action levels for characterized mixtures using PID or FID operating in total survey mode. The minimum instrumentation for unidentified product or mixed hazard (hydrocarbons and other chemicals) is a combination PID/FID detector or separate PID and FID instruments and detector tubes for benzene, chlorinated hydrocarbons, and vinyl chloride. Program action levels are based upon standard EPA guidance.

For totally uncharacterized sites (where uncontrolled dumping outside of government sources may have occurred), the SHSO will apply a factor of two reduction in these action levels.

**10.5.3. Dust Monitoring**

Dust exposure may be monitored as specified in the site specific health and safety plan supplement. Dust exposure is monitored with a forward scattering, pulsed-light-emitting-diode sensing configuration. This system measures total dust or respirable dust; however, individual toxic constituents are not determined. Action levels for toxic dusts are established based upon assumed or estimated airborne concentrations of various constituents. Action levels may be modified as detailed analytical information becomes available. Base action levels for total dust and various toxic metals are provided in Table 10-4, "Action Levels for Dusts." Dust monitoring is performed at sites where a potential for exposure to toxic metal dusts or toxic nonvolatile or semivolatile compounds exists.

**10.5.4. Noise Monitoring**

Noise exposure will be controlled to within the OSHA limits. Generally, this will be accomplished by issuing hearing protection to workers who are required to operate heavy equipment, remain near heavy equipment, or who are otherwise exposed to high noise levels. If there is a question as to whether an area requires the use of noise protection, a noise survey will be performed. For workers whose daily duties require movement between areas of variable noise exposure, noise dosimeters will be utilized. For fixed locations or installations, such as machinery areas, pump rooms, etc., a noise survey will be performed to determine if a hearing-protection warning sign must be posted. Areas identified as potential noise-hazard areas will be evaluated for compliance with the OSHA noise standard for general industry.

Noise monitoring will be conducted in accordance with CLEAN II PP HS 3.3, "Hearing Conservation."

**10.5.5. Ionizing Radiation**

The SHSO shall perform a walkover gamma radiation survey at sites where the potential for ionizing radiation or radioactive material contamination exists. This may include disposal sites that accepted military industrial waste, ship disposal areas, former defense surplus-material storage areas, and similar facilities. The SHSO shall monitor equipment used for soil-intrusive activity at these sites for alpha- and beta-emitting contamination on a regular basis. Basic action levels for radionuclides are provided as Table 10-5. The site-specific health and safety supplement will describe the monitoring required.

**10.5.6. Other Physical Agents**

Monitoring for other physical agents will be performed as required based on the hazard analysis.

**Solar Radiation**

Monitoring will not be performed; however, the SHSO will emphasize the importance of use of sunblock and clothing to minimize the effects of solar radiation on the skin.

**Nonionizing Radiation**

The need for nonionizing radiation surveys will be identified in the preliminary site visit and will be included in the site-specific health and safety plan supplement. The need for nonionizing radiation surveys is expected to be limited.

### **10.5.7. Heat Stress**

Wearing PPE puts a hazardous waste worker at considerable risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, work load, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at the hazardous waste sites, regular monitoring and other preventive precautions are vital.

Refer to SOP 5.1.17, "Heat Stress Control and Evaluation," for additional details on the signs, symptoms, and first aid for heat stress conditions. Basic action levels for heat stress monitoring are provided as Table 10-6.

When the temperature in the work area is above 70°F (21°C), or encapsulating ensembles are used, heat stress evaluations shall be performed by the SHSO.

When monitoring to evaluate heat stress using the ACGIH heat stress TLVs is performed using the Wet Bulb Temperature Method, permissible exposure limits must be corrected for workers wearing semipermeable or impermeable encapsulating ensembles (i.e., PE coated Tyvek suits).

### **10.6. PERSONNEL MONITORING**

Personnel monitoring will be initiated if the action levels for screening survey instruments as described in this plan or the site-specific health and safety plan supplement are exceeded. The SHSO is responsible for performing personal monitoring of Program employees only. Subcontractors are responsible for any required OSHA-compliance monitoring of their personnel; however, the SHSO may perform personnel monitoring of any personnel, including other subcontractors. Personnel monitoring performed by Program personnel will be conducted in accordance with CLEAN II PP HS 4.4, "Hazard Monitoring Program," and applicable SOPs. Typical sampling and analytical methods that may be used are identified in Table 10-7.

### **10.7. BIOLOGICAL AGENTS**

Biological agent atmospheric monitoring will not be performed as a routine measure. The SHSO will monitor for hazardous biological agents and will maintain an appropriate awareness level among all site workers of identified agents and vectors.

**Table 10-1**  
**Chemical Monitoring Plan**

Chemical	Type of Monitoring	Typical Instrument (and options)	Calibration Frequency	Calibration Method
Total Hydrocarbon	direct reading	PID <sup>1</sup> or FID <sup>2</sup>	daily	prepared standard
Explosive Mixtures & Methane	direct reading	Explosimeter	daily	prepared standard
Toxic Gases	direct reading	PID/FID <sup>3</sup>	daily	prepared standard
		Length of stain (Dräger) tube	n.a.	n.a.
Benzene	direct reading	Length of stain (Dräger) tube	n.a.	n.a.
		(Photovac GC)	2/day	prepared standard
Heavy Metal	sampling	37mm filter	daily ( pump)	flowmeter
Mercury	direct reading	Jerome analyzer	annual	manufacturer
Hydrogen Sulfide	direct reading	Gastech handheld	weekly	prepared standard
		Length of stain (Dräger) tube	not required	n.a.
			weekly	prepared standard
Vinyl Chloride	direct reading	Dräger tube	not required	n.a.

- 1 Photoionization detector  
 2 Flameionization detector  
 3 Use of both PID and FID is required

Table 10-2  
**Monitoring Methods and Action Levels for Petroleum Hydrocarbon Only Sites**

Hazard	Method	Action Level <sup>4</sup>	Protection Action
Volatile Organic Hydrocarbons (benzene present or suspected) <sup>5</sup>	PID, FID <sup>6</sup>	> 5 ppm <sup>7</sup>	Air-purifying respirator, full face (FF)
		> 10 ppm	Air-purifying respirator (FF)
		> 50 ppm	Supplied air
		> 100 ppm	STOP WORK
Benzene (not present) <sup>8</sup>	PID, FID	> 25 ppm	Air purifying respirator (FF)
		> 100 ppm	Air-purifying respirator (FF)
		> 200 ppm	Supplied air
		> 500 ppm	STOP WORK
Combustible Gas	Explosimeter or FID <sup>9</sup>	< 5% LEL	No action
		> 10 % LEL	Start continuous monitoring
		< 20 % LEL	Permit only classified electrical equipment and nonsparking tools
		> 20 % LEL	Stop work, ascertain source of gas
Oxygen Concentration	Oxygen analyzer	<19.5 % v/v	Leave area, evaluate reason for deficiency, remonitor remotely or with IDLH entry program
		<20.5 - >19.5 % v/v	Slight deficiency, continue continuous monitoring
		20.5 -21.5% v/v	Normal range
		>21.5% v/v	Elevated reading, check calibration, investigate cause, stop any potential spark-producing activity

4 All actions levels are above background.

5 Action level based on 20% benzene; action level should be reestablished based on periodic analysis of atmosphere.

6 Calibration gas is isobutylene.

7 No protective action required if less than (<) lower action level.

8 Confirm benzene is less than 1 ppm with benzene Drager tube (81 01 841) (0.5/c) only or by GC analysis.

9 Suitably calibrated.

Table 10-3

**Action Levels for Characterized Mixtures Using Screening Survey Instruments**

Hazard	Method	Action Level	Protection Action
<b>Total Organic Vapor</b>	PID, FID	Background to < 5 ppm above background	No action required
	PID, FID	> 5 ppm	Air-purifying respirator, full face (FF), Level C protection, personnel monitoring indicated
		> 10 ppm	Air-purifying respirator, (FF), Level C protection, personnel monitoring required
		> 50 ppm	Supplied air protection, Level B
		> 100 ppm	STOP WORK
<b>Combustible Gas</b>	Explosimeter (FID)	< 5% LEL	No action
		> 10 % LEL	Start continuous monitoring
		< 20 % LEL	Permit only classified electrical equipment and nonsparking tools
		> 20 % LEL	STOP WORK, ascertain source of gas
<b>Oxygen Concentration</b>	Oxygen analyzer	<19.5 % v/v	Leave area, evaluate reason for deficiency, remonitor remotely or with IDLH entry program
		<20.5 - > 19.5 v/v	Slight deficiency, continue continuous monitoring
		20-5 -21.5% v/v	Normal range
		>21.0% v/v	Elevated reading, check calibration, investigate cause, stop any potential spark-producing activity

Table 10-4  
Action Levels for Dusts

Hazard	Method	Action Level <sup>10</sup>	Protection Action
<b>Heavy Metals</b>			
as Total Dust (no toxic constituents)	Dust Monitoring Miniram	< 1 mg/m <sup>3</sup>	No action required
		> 1 mg/m <sup>3</sup>	Air-purifying respirator
as Total Dust (toxic constituents present)	Dust Monitoring Miniram	> 0.5 mg/m <sup>3</sup>	Air purifying respirator
as Metal <sup>11</sup>	Personal Monitoring		
Chromium		> 0.5 mg/m <sup>3</sup>	Air-purifying respirator
Chromium (VI)		> 0.05 mg/m <sup>3</sup>	Air purifying respirator
Nickel (sol)		> 0.1 mg/m <sup>3</sup>	Air-purifying respirator
Nickel (insol)		> 1.0 mg/m <sup>3</sup>	Air purifying respirator
Mercury (alkyl)		> 0.01 mg/m <sup>3</sup>	Air-purifying respirator
Zinc		> 1.0 mg/m <sup>3</sup>	Air purifying respirator
Vanadium		> 0.05 mg/m <sup>3</sup>	Air-purifying respirator
Lead		> 0.05 mg/m <sup>3</sup>	Air purifying respirator
Cobalt		> 0.05 mg/m <sup>3</sup>	Air-purifying respirator
Copper		> 0.2 mg/m <sup>3</sup>	Air purifying respirator
Cadmium		> 0.05 mg/m <sup>3</sup>	Air-purifying respirator
Selenium		> 0.2 mg/m <sup>3</sup>	Air purifying respirator
Arsenic		> 0.01 mg/m <sup>3</sup>	Air-purifying respirator

<sup>10</sup> Above background.

<sup>11</sup> Based on ACGIH TLV.

Table 10-5  
Action Levels for Radionuclides at the Site

Type Measurement	Action Level	Action
External Gamma	>0.1 mR/hour	Contact HSM
Beta-Gamma Contamination	>2 x Background (500 dpm/100 cm <sup>2</sup> )	Contact HSM
Alpha Contamination	>2 x Background (10 dpm/100 cm <sup>2</sup> )	Contact HSM

Table 10-6

Frequency of Physiological Monitoring For Fit and Acclimated Workers<sup>12</sup>

Adjusted Temperature <sup>13</sup>	Normal Work Ensemble <sup>14</sup> After Each:	Impermeable Ensemble After Each:
90° F (32.2° C) or above	45 minutes of work	15 minutes of work
86.5 - 90.0° F (30.8 - 32.2° C) <sup>2</sup>	60 minutes of work	30 minutes of work
82.5 - 86.5° F (28.1 - 30.8° C) <sup>2</sup>	90 minutes of work	60 minutes of work
76.5 - 82.5° F (25.3 - 28.1° C) <sup>2</sup>	120 minutes of work	90 minutes of work
72.5 - 76.5° F (22.5 - 25.3° C) <sup>2</sup>	150 minutes of work	120 minutes of work

<sup>12</sup> For work levels of 250 kilocalories/hour.

<sup>13</sup> Calculate the adjusted air temperature ( $T_a$  adj) by using this equation:  $T_a$  adj (°F) =  $T_a$  (°F) + (13 x % sunshine/100). Measure air temperature ( $T_a$ ) with a standard mercury-in-glass thermometer with the bulb shielded from radiant heat. Estimate the percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadow).

<sup>14</sup> A normal work ensemble consists of coveralls or other cotton clothing with long sleeves and pants.

Table 10-7  
**Sampling and Analytical Methods for Air Contaminants**

Compound	Method <sup>15</sup>	Sample Media	Flow Rate (lpm)	Sample Preservation Sample Collection Notes
Nuisance Dust	NIOSH <sup>16</sup> 0500	PVC <sup>17</sup>	1.5 - 3	Preweight filter <sup>18</sup>
Respirable Dust	NIOSH 0600	PVC	1.7 <sup>19</sup>	Preweight filter Use 10 mm Nylon Cyclone
Pesticides	EPA 7010	Polyurethane Foam	consult method	Area samples
Pesticides	NIOSH 5519	MCE <sup>20</sup> Filter and Chromosorb 102	consult method	
Organochlorine	NIOSH 5510			
Pesticides	NIOSH 5012	Glass Fiber, 37-mm	1.0 -2.0	Transfer filters to sample vial, preserve with isooctane
Organophos- phorous				
Pesticides	NIOSH 5006	Glass fiber Type A,37 mm	0.2 - 0.5	
Carbamate				
Aldrin	NIOSH 5502	Glass fiber A/E and impinger	0.2 - 0.5	Refer to method
Metals	NIOSH 7300	Mixed cellulose	2.0 -3.0	Specify specific metal for analysis

- <sup>15</sup> Check with laboratory before finalizing method.  
<sup>16</sup> National Institute for Occupational Safety and Health.  
<sup>17</sup> Polyvinyl chloride.  
<sup>18</sup> Laboratory performing analysis shall preweigh filter.  
<sup>19</sup> Exactly.  
<sup>20</sup> Mixed cellulose ester.

# PERSONAL PROTECTIVE EQUIPMENT PROGRAM

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## 11.1. GENERAL

Personal Protective Equipment (PPE) consists of three components: standard safety equipment required on the site, special PPE (fall protection, water safety), and respiratory protective equipment.

## 11.2. PROJECT POLICY

Standard safety equipment is described in PP HS 5.1, "Field Safety Program." Protective equipment for chemical hazards is described in PP HS 3.2, "Personnel Protective Equipment." All personnel will be expected to come to work with proper safety equipment. In addition, any activity-specific safety requirements will be complied with by all project and subcontractor personnel entering a site.

### 11.2.1. Equipment

The various types of PPE and definitions of the standard ensembles available for the CLEAN II project are discussed in PP HS 3.2.

The level for a particular operation is to be determined by the SHSO at the start of work in consultation with the Health and Safety Supervisor and the ROICC or designated installation safety coordinator. This level may be altered as conditions change. The SHSO will identify the requirements on a HWP, which will be posted at the job site.

A detailed description of the proposed initial PPE ensemble for tasks without identified chemical exposure is found at Table 11-1. The site-specific supplement will establish the proposed initial PPE ensemble for tasks with exposure potential.

**Table 11-1**  
**Personal Protective Equipment**  
**(no identified chemical exposure)**

Task	Hazard	Level	Body	Respirator	Skin	Other
Mobilization and Set Up	Driving Material handling Lifting Pinch points	D	Normal work clothes Long pants		Work gloves optional	Hard hat Safety glasses Steel toe boots Ear plugs (opt.)
Site Land Surveying	Driving Material Handling Lifting	D	Normal work clothes Long pants			Hard hat Safety glasses
Geophysical Surveying	Driving Material Handling Lifting	D	Normal work clothes Long pants			Hard hat Safety glasses
Soil Boring Soil Sampling Well Development	Operation of drill rig Noise No identified chemical exposure	D	Normal work clothes Long pants	Full-face w/ Hepa and OV ready for use	Work gloves or chemical protective gloves	Hard hat Safety glasses Rubber steel-toe boots or overboots Ear plugs

## **HAZARD COMMUNICATION PROGRAM**

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### **12.1. GENERAL**

A hazard communication program as described in CLEAN II PP HS 1.9, "Hazard Communication Program," will be implemented for the task.

### **12.2. MATERIAL SAFETY DATA SHEET AVAILABILITY**

Material Safety Data Sheets (MSDSs) will be available from the SHSO or will be located at SHSO office specified in the supplement or from the employer. Subcontractors will be required to provide MSDSs for chemicals and materials brought on the site to the SHSO before starting work.

MSDSs shall be made available to any site worker upon request, without regard to employer.

The SHSO shall maintain an index of MSDS available from each subcontractor at the site.

Information on chemical, physical, and biological agents identified during the investigation will be made available as part of the site informational program.

### **12.3. TRAINING**

Each employer shall conduct hazard communication training for its employees and maintain records thereof.

### **12.4. LABELING**

The SHSO shall assure that manufacturer labels are not defaced, altered, or removed, and that hazard information remains legible.

### **12.5. SUBCONTRACTORS**

Subcontractors shall implement an OSHA-compliant hazard communication program.

### **12.6. WORKER INFORMATIONAL PROGRAM**

The SHSO shall provide information concerning levels of exposure, site hazards, planned future activity at the site, and other relevant and appropriate information to all site workers associated with the Project by written

informational bulletins and by participation at least monthly in each subcontractors tool box or tailgate meeting.

## Section 13

# RESPIRATORY PROTECTION PROGRAM

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### 13.1. GENERAL

Use of respiratory protection will be in accordance with applicable regulations and CLEAN II PP HS 3.1, "Respiratory Protection Program."

### 13.2. TYPE OF EQUIPMENT

Respirators shall be selected from Program-approved devices based upon an assessment of the nature and extent of hazardous atmospheres that are anticipated to be encountered during field activity. The initial respirator assignment for each operation is provided in the site-specific health and safety plan supplement and on the HWP.

### 13.3. MEDICAL SURVEILLANCE

Program participants who are required to utilize respiratory protection shall be fully qualified by the Program, team subcontractor, or respective subcontractor medical surveillance program. In accordance with SOP 3.1.2, "Respirator Fit Testing," each user of respiratory protection shall be qualified by:

- physician's statement, which includes a respirator-use certification; and
- fit-test certificate completed within the past 12 months for the model and size of respirator to be used.

### 13.4. FIT TESTING

All respiratory protection program participants shall receive an annual fit test in accordance with their respective respiratory protection program. Fit tests shall only be valid for the make, model, and size of respirator fitted.

In the event Program personnel do not have proof of a current fit test for the assigned respirator, the HSS or other Health Services staff will conduct a quantitative<sup>1</sup> fit test prior to assignment to field work that may require a respirator. The SHSO will not perform fit tests for subcontractor personnel. Team subcontractor personnel may be fit tested by their employer.

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<sup>1</sup> Subcontractor personnel are not required to have a quantitative fit test for most site activities although this practice is recommended.

**13.5. RESPIRATOR CLEANING AND MAINTENANCE**

Each Program respirator user shall be issued a respirator for exclusive personal use. Subcontractors will also be encouraged to follow this policy.

If respirators are shared, such as for emergency-use devices, a qualified individual is assigned the responsibility for the care, maintenance, inspection, cleaning, and sanitizing of each respirator at the end of each shift. When respirators are not shared, each individual shall be responsible for cleaning and routine maintenance of his own respirator.

Each respirator user shall be instructed to inspect his respirator prior to each use, after each use, and after cleaning in accordance with SOP 3.1.3, "Respirator Maintenance."

**13.6. RESPIRATOR CLEANING SUPPLIES**

Routine cleaning during field work will be accomplished at the respirator cleaning station located adjacent to the access control point. All necessary supplies will be provided for workers to clean and sanitize their respirators. (Note: Decontamination does not constitute respirator cleaning, but is always performed before respirator cleaning.) Supplies provided by the SHSO for Program personnel and each subcontractor shall include:

- moist treated wipes,
- cleaning/sanitizing solution,
- cleaning solution basins,
- soft-bristle scrub brushes,
- rinse basins,
- drying area, and
- clean storage bags (zip-lock type).

**13.7. SUBCONTRACTORS**

Each subcontractor shall implement an independent respiratory protection program for its personnel. Subcontractors shall maintain current fit test certificate and medical certification for each employee as specified in their subcontracts. Subcontractors shall provide buddy, standby, and rescue personnel when required for special operations.

**13.8. SPECIAL TRAINING**

Special training is required for the use of Type C (airline supplied) and self contained apparatus. Personnel shall demonstrate training in the use of Type C respiratory protection as evidenced by a copy of the training outline associated with a 40-hour class, a letter or certificate from their employer stating that they are trained in the use of this equipment, or a training certificate from a supplemental training course for this equipment.

## **TRAINING ASSIGNMENTS**

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### **14.1. BASIC TRAINING REQUIRED**

All Program, and subcontractor employees involved with field activities shall have completed a 40-hour health and safety training course or be trained in accordance with the hazardous waste training requirements specified in 29 CFR 1910.120 (8 CCR 5192). Personnel directly supervising employees in the exclusion or contamination reduction zone shall have received the 8-hour Supervisor's Training for hazardous waste operations. All personnel required to meet the above requirements shall be current with respect to the 8-hour refresher requirements of 29 CFR 1910.120 (8 CCR 5192). Other training that may be required is identified in SOPs and site-specific health and safety plan supplements. A training assignment matrix is provided as Table 14.1.

### **14.2. PROGRAM TRAINING**

All personnel entering controlled areas or performing specified field support activities will attend a Program health and safety orientation presented by the SHSO or Health and Safety Supervisor prior to beginning field work on the project. This is a one-time training session, which may be combined with site-specific training. This training shall address general Program policies, rules and regulations, and other matters that are common between Program sites.

### **14.3. SITE SPECIFIC TRAINING**

Prior to commencing work activities, all personnel will be required to attend a safety orientation given by the SHSO. This meeting is required by SWDIV, Program policy and OSHA. Attendance at the meeting is mandatory for all project personnel and supervisors. A SWDIV representative or installation/activity representative may also be present to answer any questions and review the site requirements. New employees reporting to work after the job starts are also required to attend a safety orientation prior to engaging in any work activities. This orientation will be performed by the SHSO or by the subcontractor Health and Safety Coordinator. Documentation of this orientation shall be maintained by the employer.

### **14.4. SAFETY BRIEFINGS**

The Program and subcontractor supervisors shall conduct Tool Box Safety Meetings on a regular basis to assure that new or important existing information regarding site health and safety is given to all personnel. The SHSO will provide a suggested topic for the weekly meeting and will provide

periodic information to be presented to all workers at these meetings. The SHSO may participate in subcontractor safety briefings.

**14.5. DOCUMENTATION**

Each subcontractor shall maintain the weekly meeting minutes together with a list of attendees in their project records.

Subcontractor employees shall maintain proof of all required training on-site.

**14.6. SUPERVISED FIELD EXPERIENCE**

In accordance with regulatory requirements, employees without documentation of supervised field experience shall work under close supervision until they complete 24 hours of supervised field experience.

**14.7. EXCEPTIONS**

Exceptions to training requirements shall be specified in the site-specific health and safety plan supplement. Exceptions may be specified for subcontractors performing non-intrusive work in areas where public/base personnel access is unrestricted.

Table 14-1  
**Training Assignment Matrix**

Category	40-Hour Basic	8-Hour Refresher	24 Hours Supervised Experience	8-Hour Supervisor/Supervisor Refresher	Site <sup>1</sup> Specific	CLEAN II Orientation	Special Equipment Use <sup>2</sup>
Team Employee	X	X	X	3	X	X	X
Supervisor	X	X	X	X	X	X	X
Subcontractor	X	X	X		X	X	X
Visitor <sup>4</sup>	X	X	5		X		
Vendor <sup>4</sup>	X	X	5		X		
Land Survey Geophysics Other non-intrusive	6	6	6	6	X	X	

- 1 Site-specific and CLEAN II orientation may be combined for visitors, subcontractors, temporary Team personnel and vendors.
- 2 For those employees involved in supplied air operations.
- 3 Most Program employees shall take supervisor training in lieu of standard refresher training.
- 4 For vendors requiring controlled-area access or to work on contaminated equipment.
- 5 Not required if escorted.
- 6 To be determined on a case-by-case basis.

## Section 15

# SUBCONTRACTOR REQUIREMENTS

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### 15.1. COMPANY REQUIREMENTS

The subcontractor representative will provide the following to Bechtel in advance of site work or maintain on-site:

- submit designation of the competent person for excavation, trenching, etc. as required;
- submit designation of the Health and Safety Coordinator, Alternate Health and Safety Coordinator;
- submit designation of the company Health and Safety Official or Manager;
- submit copies of the subcontractors Health and Safety Plan for the site, and Standard Operating Procedures;
- submit copies of the subcontractors Health and Safety Program, Injury and Illness Prevention Program, Code of Safe Work Practices, as applicable;
- submit copy of the subcontractors Respiratory Protection Program, Medical Surveillance Program, Employee Exposure Records Maintenance Program, Hazard Communication Program, Emergency Plans, Lockout/Tagout Program, Confined Space Entry program, and any other OSHA-required Program documents applicable to the work scope;
- submit MSDSs and product names index for all products brought on-site;
- submit written agreement to follow the SWDIV CLEAN II Project and Site-Specific Health and Safety Plan requirements applicable to subcontractors;
- maintain on site documentation of inspection and certification of safe operating condition by a competent person for each item of machinery or mechanized equipment; and
- maintain on site manufacturers instructions or operating procedures for each item of machinery or mechanized equipment.

### 15.2. PERSONNEL DOCUMENTATION REQUIREMENTS

All personnel will be required to have available on-site the following documents; alternately, a certified report showing the names and dates when the requirement was last completed will be acceptable.

- physicians statement for hazardous waste site work;
- physicians statement for respirator use, if such use is contemplated;
- respirator fit-test certificate (for each model and size that may be required);
- statement of three days supervised field experience on a hazardous waste site;
- training course certificate, 40 ( or 24) hours;
- refresher training course certificate (after one year from initial training);
- supervisor training certificate (8 hour) (for supervisors);
- first aid/ CPR training certification, if required based upon site-specific needs;
- respirator training certificate for special devices; and
- employer's certification that the employee has completed training to a level required by his job function and responsibilities.

## **EMERGENCY RESPONSE PLAN**

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### **16.1. GENERAL**

Emergency response planning and notification procedures for each site will comply with this section of the SHSP.

For medical or other emergencies, emergency telephone numbers are provided in the site-specific health and safety plan supplement. These numbers shall be provided near all project phones and posted at all field sites. All project personnel should commit these numbers to memory.

For minor first aid problems, Program personnel will report to a designated first aid provider for treatment.

The site-specific health and safety plan supplement shall identify local evacuation routes, emergency telephone locations, emergency eyewash facilities, and first aid facilities available to Program personnel.

The closest emergency facilities to the field work site will be verified by the SHSO and will be identified to all personnel prior to commencement of field activities.

Any emergency event, injury, or use of showers or eyewashes, must be reported to the employee's supervisor and the SHSO. Reporting requirements and the need for additional reports regarding Program personnel shall be in accordance with PP HS 1.6, " Incident, Illness, and Injury Reporting."

Personnel who may be required to be notified in the event of an emergency, personnel injury, fire, or property damage are listed in the site-specific health and safety plan supplement.

### **16.2. EMERGENCY EQUIPMENT**

#### **16.2.1. First Aid**

Each subcontractor shall provide at a minimum one 32-unit first-aid kit and one 16-unit kit at each additional work location. Additionally, a more extensive selection of first aid supplies will be maintained by the SHSO at the site office or base area in accordance with PP HS 2.3, First Aid.

**16.2.2. Emergency Deluge Water**

Five gallons of water shall be available in each work area reserved for emergency uses only. If the water is used, it shall be replaced before any work proceeds. Areas with significant potential for personal contamination with free product, acids, caustics, corrosives, or etiologic agents will maintain pressurized portable safety shower/eyewash units capable of a 15-minute flow.

**16.2.3. Other Emergency Supplies**

Each subcontractor shall provide at a minimum one 3A:40B:40C fire extinguisher in each vehicle and on each drill rig or other piece of heavy equipment.

The following additional emergency equipment may be maintained in ready condition at the site controlled-area entry point. The additional equipment selected will vary with specific sites.

Equipment	Number
Self-Contained Breathing Apparatus	2
Full-Face Respirators (HEPA/Acid/OV)	2
Coveralls, Saranex	4
Spill Cleanup and Control Supplies	1 kit
Emergency Personal Decontamination Supplies	1 kit

**16.2.4. Site-Specific Emergency Equipment**

Additional emergency equipment specified in the site-specific health and safety plan supplement shall be maintained on-site at all times.

**16.3. GENERAL EMERGENCY RESPONSIBILITIES**

Emergency responsibilities under a declared emergency (emergency plan activated) will fall to individuals designated for emergency-response duties under the emergency plan.

**16.3.1. Emergency Coordinator**

The Emergency Coordinator will be responsible for supervising all project emergency response activities and will have decision-making authority in accordance with PP HS 2.1, " Emergency Response Planning."

The Emergency Coordinator will :

- make initial emergency notifications;
- be identifiable to local emergency assistance personnel;
- designate an alternate at the time of emergency plan activation;
- resolve safety and health problems, with assistance from the SHSO;
- obtain equipment and supplies as needed; and
- promptly determine the character, source, amount, and extent of any release; assess the possible hazards to people and the environment; and enact procedures to limit damage.

**16.3.2. Site Health and Safety Officer**

Emergency response duties of the SHSO include:

- preparing for and overseeing any emergency evacuation of the site;
- assuring that all personnel are familiar with procedures for communicating with local emergency services and project administrators;
- maintaining a logbook of all on-site emergency incidents;
- Notifying all local emergency assistance personnel (Either the SHSO or the Emergency Coordinator will document and assure that appropriate parties are notified by phone in a timely manner in the event of an emergency.);
- providing emergency first aid within limits of qualification; and
- maintaining the daily log-in/log-out for personnel accountability information following emergency plan activation.

**16.3.3. Emergency Response Team**

The Emergency Response Team (ERT) is responsible for rescue, fire fighting, and spill control and response on-site until activity or offsite emergency response personnel can be called in. The ERT will provide initial response only. The HSS shall designate ERT members in advance of field work who are

qualified for the range of anticipated emergency events. ERT members will be first aid/CPR and SCBA qualified, and they shall have completed fire fighting and emergency spill control training where the potential for spills of regulated materials is present. ERT members may be Program or subcontractor employees. The emergency coordinator will direct the ERT as required.

#### **16.3.4. Other Site Personnel**

All site personnel shall follow instructions of the ERT once an emergency event has been declared.

#### **16.4. INCIDENT FOLLOW-UP**

A detailed investigation of emergency plan activation causes will be conducted in accordance with PP HS 2.2, "Emergency Response Follow-up," jointly by the Project Manager, the HSS, and any additional personnel designated by the Program Manager.

#### **16.5. OCCUPATIONAL INJURIES**

The following steps shall be taken by on-scene personnel in the event of personnel injury:

- assess the situation quickly;
- remove injured people from further danger;
- render first aid if trained; if not trained, seek immediate assistance;
- send for help; notify emergency response or medical personnel;
- perform decontamination if required, if this will not interfere with necessary medical treatment;
- move injured people to a safe location if this can be done safely.

Occupational injuries shall be reported as follows:

- the employees supervisor will be notified promptly;
- the employee's supervisor will notify the company (or subcontractor) safety coordinator;
- the subcontractor safety coordinator will notify the SHSO;
- the subcontractor safety coordinator will provide a written report within 24 hours to the SHSO; and

- the SHSO will notify the project manager and the ROICC or designated installation safety coordinator and will forward copies of the written reports to the Health and Safety Supervisor, Health and Safety Manager, and Operations Manager in accordance with SOPs.

#### **16.6. FIRE EMERGENCY**

Supervisors must maintain a constant awareness of potential fire hazards. Site personnel should use portable extinguishers to quench any small, incipient fires. If personnel cannot extinguish the fire, however, they must evacuate the area immediately and must notify first the site Emergency Fire Department. The Emergency Coordinator will interact with fire department personnel when they arrive and will provide all pertinent information, including potential hazards, missing personnel and their last known locations, and the location and description of the fire.

#### **16.7. EVACUATION PLAN**

The emergency plan will be activated for any required evacuations. The Emergency Coordinator will direct all emergency evacuations.

Any evacuation of a field site will continue until normal working conditions have been restored and permission to return to work is granted by authorized personnel (normally this will include the HSS and ROICC). During any evacuation, all personnel should remain calm and follow prescribed procedures for an orderly exit. If the Emergency Coordinator determines that only the immediate work area should be evacuated, personnel may be notified verbally. All evacuation routes will be in the direction upwind and/or at right angles to the hazard causing the emergency.

When the evacuation notice is issued, all equipment in use will be shut down if time allows. Unless otherwise directed by the Emergency Coordinator, all personnel will then proceed to the common, predetermined location specified by the Emergency Coordinator as indicated on maps of the site depicting evacuation routes from different areas of the site. These maps will be posted on-site, and reviewed with all personnel at the site orientation. Personnel who cannot reach the common evacuation point location must report their individual locations to the Emergency Coordinator as soon as possible.

##### **16.7.1. Evacuation From Any Site Location**

Specific evacuation routes from the site will be established before work begins. All personnel will meet at a predesignated meeting point unless otherwise directed by ERT personnel. The Emergency Coordinator will determine

whether any personnel are missing and will activate the ERT if action is necessary to locate personnel. The Emergency Coordinator shall request assistance from activity/installation personnel for major emergencies. All personnel shall consider the nature of the emergency, wind conditions, and available escape routes when selecting an evacuation route.

#### **16.8. EMERGENCY SIGNAL SYSTEM**

Emergency signals are used to perform the following:

- alert team to emergencies,
- provide safety information of an essential nature,
- communicate stop-work information, and
- maintain site control.

Signals used at the site shall be in accordance with installation signal as specified in the supplement. If the installation does not have a signal system, or if the work activities are out of range, the following signals shall be used:

Signal	Meaning
One Short Blast	Warning or attention, stand by for directions
One Extended Blast	Evacuation
Repetitive Short Blasts	Fire
One Short/ One Long Blast	All clear
Short /Long Blast, Repeated	Medical emergency

### 16.9. PERSONNEL RESCUE

Personnel accountability and rescue is the first priority of the emergency coordinator. If personnel are identified as missing or in known danger, search and rescue will be accomplished by the ERT in conjunction with the activity/installation fire department or other authorized response organizations. Project personnel are not authorized to perform rescue or emergency response operations other than those outlined in this section.

### 16.10. SITE SECURITY DURING EMERGENCY OPERATIONS

During on-site operations, the site will be secured by posting site access points with caution tape or chain and posting a sign similar to the one below:

CAUTION  
Investigation Site  
CLEAN II Program  
Access Suspended  
Contact \_\_\_\_\_ for Entry

### 16.11. EMERGENCY PLANNING FOR REMOTE SITE LOCATIONS

Special consideration and planning is required for work in remote site locations, notwithstanding adequate communications.

#### 16.11.1. First Aid

Personnel working in remote site locations shall have current basic first aid/CPR training. First aid kits shall be augmented with the following supplies for such work (these kits are available from the SHSO):

- portable (folding) stretcher

- rescue (Mylar film) blanket
- fire blanket
- snakebite kit
- emergency oxygen
- extra compresses

### 16.11.2. Communications

Communication devices shall be maintained on-site within ready access. Communications shall be tested twice per shift. Two-way radios are the normal means of providing each team with communication where an air horn will not suffice. The SHSO shall always have a radio in possession.

### 16.11.3. Medical Evacuation Services

If routine ambulance service and access to trauma center is not available within 30 minutes, arrangements for helicopter medical evacuation service shall be in place prior to use of any heavy equipment or subsurface investigation activity.

## 16.12. EMERGENCY HAND SIGNAL SYSTEM

Emergency hand signals are used when wearing protective gear, or when working in high-noise environments. The standard Program signals are as follows:

Signal	Meaning
Hand clutching throat	Out of air, I can't breathe
Hands on top of head	Need assistance
Thumbs up	I am OK / I understand
Thumbs down	No / negative
Grip partners wrist or both hands around partners waist	Leave area immediately

**16.13. SURVIVAL EQUIPMENT AND TRAINING**

Personnel working at remote locations not regularly traveled or working off road shall receive a basic survival orientation and shall each maintain within sight of others at all times, the items listed in the site-specific health and safety plan supplement. A typical list of supplies is as follows:

- water (2 quarts)
- basic first aid kit
- emergency blanket
- signal mirror
- water proof matches
- sunscreen
- sunglasses
- knife (4 inch blade)
- snakebite kit
- small supply of food
- long-sleeve jacket

Food, water, sunglasses, jacket, and knife are considered personal items to be provided by the employee.

**16.14. WINTER TRAVEL**

Personnel should use judgment in considering additional supplies and clothing when traveling or working in mountain areas in wintertime.

**16.15. MARINE ENVIRONMENT**

Refer to the site-specific health and safety plan supplement for information.

**16.16. OFF-SITE SUPPORT**

Governmental and other agencies that may be contacted for support and advice during an emergency event are identified in Table 16-1.

**16.17. SNAKEBITE KIT USE**

Snakebite kits are provided for use in emergency situations where first aid may be delayed more than four to five hours. If possible, the snake should be identified to aid the medical provider in treatment.

Table 16-1  
**Site and Program Emergency Notification Contacts**

Contact	Telephone	Alternate
California Office of Emergency Services	(800) 852-7550 <sup>1</sup>	Support Assistance - (916) 262-1621* Haz Mat Division - (916) 262-1750
EPA National Response Center	(800) 424-8802	EPA Environmental Emergencies (206) 442-1263*
EPA Region 9	(415) 744-2000*	
CAL-EPA	(916) 445-3846	
CHEMTREC	(800) 424-9300	
RCRA Hotline	(800) 424-9346*	
TSCA Hotline	(202) 554-1404	
California DTSC	(916) 255-2002	
EPA Pesticide Program	(206)442-1090	
Poison Information Center, LA Cty	(213) 222-3212*	
TOXLINE	(301) 496-1131	
CAL-OSHA (Torrance Dist. Office)	(310) 516-3734	(415) 557-1677 (S.F. Dist. Office)
OSHA Region 9	(415) 557-8640	
SCAQMD	(310) 537-1631	
US Coast Guard (Marine Envir Resp)	(310) 980-4444*	
CAL Trans District 7, Long Beach	(213) 897-0383*	
Calif. Dept. of Fish and Game	(916) 445-3531	

<sup>1</sup> Asterisk indicates 24-hour telephone number.

## FIRST-AID PLAN

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### 17.1. GENERAL

A minimum of two people will be on-site during field work who have a valid certificate in basic first aid/CPR from the American Red Cross or equivalent, documented training. The Program Health and Safety Manager may reduce this requirement to one person when on-site facilities are immediately available.

Each subcontractor will be required to provide one first aid/CPR-qualified individual on each shift; however, if a subcontractor is working alone, two qualified personnel shall be available. This requirement may be met if two sites are within one-half mile of each other and communications are in place.

First-aid kits will be maintained by each subcontractor. A five-gallon supply of emergency deluge water shall be available and reserved for emergency use. Each subcontractor shall maintain at each work location at least two eyewash bottles (one-quart capacity each) available for immediate use. The SHSO shall periodically verify that the first-aid supplies are available.

Qualified Program personnel may use the first-aid kits to administer first aid to any workers who are injured. The SHSO shall verify daily that first aid/CPR qualified personnel are on site. Unqualified personnel should only use the first-aid kits to assist others in an emergency when qualified personnel are not available.

When responding to serious personnel injuries, the Emergency Coordinator or the SHSO will contact the appropriate authorities (e.g., the fire department, a doctor, paramedics, or the police).

Severely injured personnel will be transported to the hospital by ambulance service. Site personnel will transport injured persons to the hospital only if an ambulance service is not available in a timely manner.

Treatment of workers injured while in an area controlled because of hazardous chemicals or hazardous wastes shall be in accordance with HS 2.3, "First Aid." Life-saving care shall be provided immediately, without regard for consideration of decontamination requirements. In the presence of strong acid or caustics, caregivers shall don appropriate protection.

**17.2. BLOOD-BORNE PATHOGENS EXPOSURE CONTROL**

All personnel should be aware of the potential for transmission of disease from contact with bodily fluids. Assume all bodily fluids are potentially infectious and use appropriate precautions. Controls to be considered are as follows:

- use the victims hand to control initial bleeding;
- use available protective gear (tyvek, gloves) to prevent contact;
- promptly wash after contact with body fluids; and
- use rescue breather for CPR.

**17.3. FIRST-AID TRAINING**

Program employees will be offered an 8-hour First Aid/CPR/Oxygen Administration course every three years and a 4-hour CPR refresher course annually. Subcontractors are responsible for training their employees.

## **FIELD SAFETY PLAN**

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### **18.1. GENERAL**

Safety rules for the site are contained in HS 5.1, " Field Safety Plan," SOP 5.1.8, " Electrical Safety," and other H & S PPs and SOPs. Refer to those procedures and the reference documents listed in Section 1.2 for a complete list of safety requirements. An abbreviated list of safety rules is set forth in Section 18.3.

### **18.2. INSPECTIONS**

Frequent and regular health and safety inspections shall be conducted at each work site. The Site Health and Safety Coordinator shall conduct a daily inspection of the workplace. This inspection shall be documented and reviewed by the Health and Safety Supervisor.

In addition to the daily inspections performed by the field team, the Health and Safety staff shall perform frequent inspections of field work sites in order to insure compliance with Program requirements. Health and Safety staff inspections shall similarly be documented and deficiencies tracked until documented closure of site activity.

### **18.3. GENERAL SAFETY RULES**

The following safe-work practices will be enforced at the site.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material will be prohibited in any area where the possibility of contamination exists.
- Face and hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.
- Legible and understandable precautionary labels will be prominently affixed to containers of scrap, waste, debris, and contaminated clothing.
- Contaminated protective clothing will not be removed from the controlled area until it has been cleaned or properly packaged and labeled.
- All wastes generated from the project activities (soiled PPE, decontamination waste, etc.) will be contained and disposed as specified in the Work Plan

- Excessive facial hair, which interferes with a satisfactory fit of the mask-to-face seal, will not be permitted.
- Contact with potentially contaminated substances will be avoided. Personnel will not walk through puddles, pools, mud, kneel on the ground, lean or sit on equipment or place monitoring equipment, or tools on contaminated surfaces.
- Personnel will not be permitted to wear contact lenses within a controlled area, except where medically required.

#### **18.4. FORBIDDEN PRACTICES**

The following practices will be strictly forbidden during any work in controlled access areas.

- horseplay;
- fighting;
- eating;
- drinking , except in authorized break areas;
- smoking;
- chewing gum, tobacco, or any other substances;
- use of facial cosmetics other than prescription medication, sunscreen or preparations used on the advice of a physician;
- unnecessary sitting or kneeling on contaminated surfaces;
- placing equipment on contaminated surfaces (when practicable);
- climbing on or over obstacles;
- starting or maintaining an open flame of any type unless authorized by the SHSO;
- entering the work site with safety equipment that has not been determined to be in proper working condition immediately prior to entry; and
- entering the work site, under any circumstances, by any employee or visitor without prior approval.

In addition to the forbidden practices, the SHSO may impose other prohibitions that may be required for safe operations.

**18.5. WORK OVER OR NEAR WATER**

Work over or near water, where there is a potential for employees to fall in and the danger of drowning exists, will be conducted in accordance with the requirements of applicable OSHA standards and USACE EM 385-1-1. Work within 15 feet of unobstructed access to water shall be deemed to be within the requirements of this section. Except where employees are protected by continuous guardrails, safety belts, or nets, or work along beaches or similar shorelines, the following requirements shall be met by all personnel.

- Personnel will use the buddy system at all times.
- Swimming shall be prohibited for personnel, except for certified divers in the performance of their duties, unless necessary to prevent injury or loss of life.
- All personnel shall wear a Coast Guard-approved life vest of the type approved to support an unconscious person face up (Type 1 with 32-pound floatation);
- Ring buoys shall be available every 200 feet. Ring buoys shall be Coast Guard-approved with 150 feet of 600-pound capacity line.
- A lifesaving boat shall be immediately available and ready for emergency use in accordance with applicable regulatory requirements. Lifesaving boats shall be supplied and equipped with the following:
  - oars and oarlocks suitably attached (except on inboard powered boats)
  - boat hook
  - anchor
  - ring buoy with 600 feet of line
  - two life preservers

**18.5.1. Additional Requirements for Working on a Floating Platform**

Refer to EM-385-1-1 and the health and safety supplement for launch, motorboat, and skiff requirements.

**18.6. DIVING OPERATIONS**

Refer to USACE EM 385 1-1 and state or federal OSHA requirements for safety during diving operations.

**18.7. FIRE SAFETY**

All site personnel will comply with all applicable fire-safety rules, for a complete list of fire-safety requirements, refer to the health and safety supplement, USACE EM 385-1-1 and SOP 5.1.16, "Welding and Cutting Safety."

The following general fire-safety rules should be known and understood by all personnel on the project site.

All personnel shall be informed of the location of the nearest fire alarm box and the local fire reporting telephone number.

- Smoking is permitted only in authorized and posted smoking areas.;
- Strike-anywhere matches are prohibited on the site property.
- A permit is required prior to any hot work including, welding, cutting, grinding, or other spark producing activity.
- Each vehicle will carry a 3A:40B:40C type fire extinguisher.
- Lay-down areas for materials will be approved before use.
- Approval to block roads, park heavy machinery or equipment, or set up drill rigs shall be obtained in advance.
- Oily rags shall be stored in closed metal containers approved for this purpose.
- Flammable and combustible liquids shall be handled only in approved safety cans.
- All personnel shall know the area escape route and alternate route.

**18.8. EARTH DRILLING EQUIPMENT**

All earth drilling activities (boring, sampling, auguring, etc.) with powered equipment shall meet the safety requirements set forth in this section. The subcontractor safety coordinator for the drilling subcontractor is responsible for

providing crews trained in safe operation of its equipment and for compliance with this section. The SHSO shall monitor compliance with this section.

#### **18.8.1. Special Planning Rules**

Earth drilling equipment shall be operated, inspected, and maintained as specified in the manufacturer's operating manual or employers instructions and code of safe practices; a copy of applicable instructions shall be available at the work site.

A prejob survey shall be conducted by the SHSO prior to bringing earth drilling equipment to the site to identify overhead electrical hazards, potential subsurface hazards, such as unexploded ordnance and buried utilities, or other hazards.

The location of any hazards shall be identified on a site layout map. Such map shall be included within the SHSP prior to start of field work and shall be reviewed with all earth drilling equipment operators. Refer to CLEAN II SOP 4.1.1, "Job Hazard Analysis," for the job-hazard-analysis requirements necessary for earth drilling.

#### **18.8.2. Training**

All earth drilling crews shall be trained in the safe operation, inspection, and maintenance of the equipment to be utilized; the safety features and procedures to be utilized during operation, inspection, and maintenance of the equipment; the hazards of operating the equipment near overhead electrical lines and underground structures; and the job-hazard analysis for the activity.

#### **18.8.3. Safety Devices**

Each earth drilling machine shall have two easily accessible emergency-stop devices: one shall be normally accessible by the operator, and one shall be normally accessible by the helper. The SHSO shall require demonstration of the operability of each device before work may begin. Emergency devices shall not be field modified, altered, or jury rigged to impair their safety function.

#### 18.8.4. Electrical Clearance

Drilling equipment shall be posted with signs warning the operator of the potential electrical hazard posed by overhead cables. If equipment is to be moved or operated with the mast up near an overhead hazard, the equipment operator shall determine that proper clearances can be maintained before moving or operating equipment with raised masts. Clearance shall be monitored by a spotter provided by the subcontractor. The distance (minimum elevation) of overhead lines shall be determined from the ROICC or designated installation safety coordinator, or it shall be measured (by electronic ranging equipment or surveyor).

The list below specifies minimum clearances to be maintained for energized overhead electric lines.

<u>Nominal System Voltage (kilovolts)</u>	<u>Minimum Required Clearance(feet)</u>
0 - 50	10
51 - 100	12
101 - 200	15
201 - 300	20
301 - 500	25
501 - 750	35
751 - 1000	45

#### 18.8.5. Induced Electrical Current

When work may be conducted near electrical transmission towers, there is a potential for induced electrical charge to be present in equipment or materials such as pipe casing. The drilling subcontractor shall take the following precautions to dissipate induced charges.

- All masts or booms shall be electrically grounded to the vehicle or base of the rig.
- The vehicle shall have a well-established ground.
- Crews shall ground metallic objects before handling, and they shall use insulated gloves.

**18.8.6. Control of Hazardous Energy (Lockout/Tagout)**

Subcontractors shall prepare and implement procedures (Hazardous Energy Control Plan) for the control of hazardous energy. Such procedures shall be submitted to the HSS prior to any field work under the CLEAN II Program. Lockout/Tagout shall be performed when repairing earth drilling equipment or other machinery. Subcontractor Hazardous Energy Control Plans shall meet U.S. Army Corps of Engineers Safety and Health Requirements EM 385-1-1 standards. Subcontractors without plans shall not repair equipment where release of kinetic or stored energy may cause injury.

**18.8.7. Moving Equipment**

Earth drilling equipment may be transported with the mast up only if the following circumstances are satisfied.

- Movement is over smooth, level terrain.
- The path has been inspected for stability, and the absence of obstacle, ruts, or holes, and overhead electrical hazards.
- The travel distance is limited to short, safe distances.

The SHSO shall be the responsible individual to determine if mast-up travel may be permitted.

**18.8.8. Equipment Setup and Operation**

Earth drilling equipment setup and operation shall meet the following requirements in accordance with USACE EM 385 1-1.

- Rigs shall be operated only on stable ground and shall be maintained level.
- Rigs having outriggers shall use outriggers in accordance with manufacturers instructions.
- Rigs shall not be operated in confined spaces without authorization of the installation/activity safety coordinator and the HSM.
- The SHSO shall monitor weather conditions. Operations shall be discontinued when electrical storms are occurring or imminent. The subcontractor safety coordinator is responsible for determining when drilling operations shall cease.

- Earth drilling crew members shall not wear loose clothing or equipment. Protective outer clothing shall be taped to minimize the potential for catching in rotating machinery.
- Auger guides shall be used on hard surfaces.
- The rig operator shall verbally alert employees and visually assure that employees are clear of hazardous parts of the rig before starting or engaging the equipment.
- Water shall be channeled away from the work area to prevent ponding.
- Water containing potentially hazardous constituents shall not be permitted to run onto roadways, thoroughfares, or private property.
- Drill rods shall neither be run nor rotated through rod-slipping devices. No more than one foot of drill rod column shall be hoisted above the top of the drill rod mast.
- Drill rod tool joints shall not be tightened or loosened while the rod column is supported by a rod-slipping device.
- Augers shall be cleaned only when the auger is stopped and the power mechanism is in neutral.
- Only long-handled shovels shall be used to move cuttings from the auger.

#### **18.8.9. Dust Control**

The subcontractor shall perform all earth drilling so as to minimize airborne dust. Dust shall be controlled to less than 0.5 milligrams per cubic meter of air (time-weighted average) as measured by a miniram (or equal) at the controlled-area boundary.

#### **18.8.10. Open Boreholes or Excavations**

Open boreholes shall be capped and flagged whenever the hole is unattended. Open excavations shall be barricaded, flashing lights shall be used if the excavation will remain open overnight, and positive access control is not otherwise maintained.

**18.9. SANITATION****18.9.1. Potable Water**

The SHSO shall assure that cool, bottled water is available at all remote sites. Bottled water shall be provided with a sanitary tap. Garden hoses are not an acceptable source of drinking water. Disposable cups shall be provided. Nonpotable water shall be marked "nonpotable, unfit for drinking, washing or cooking".

**18.9.2. Toilets**

Where employees do not have immediate access to available vehicles, temporary toilets shall be provided within a five-minute walk. During activities where provision of toilets is not practicable, such as reconnaissance or short-term mobile field activities, this requirement may be waived by the HSM.

**18.9.3. Washing Facilities**

Washing facilities with hot and cold (or tepid) running potable water shall be provided at each decontamination area. Soap and disposable towels shall also be provided. Running water may be provided by either gravity flow, pressure, or manual pump.

**18.9.4. Waste Disposal**

Waste receptacles shall be marked for their intended purpose and type of waste. All waste receptacles shall be fitted with a tight-fitting cover.

**18.9.5. Illumination**

Illumination for night work shall meet OSHA standards.

**18.9.6. Housekeeping**

The SHSO shall inspect all work areas daily for adequate housekeeping; such inspection results shall be recorded on the SHSOs daily log. The following housekeeping requirements shall be met at all times.

- All passageways, and routs of access shall be kept clear of obstructions, cables or hoses at all times.
- Empty bags of loose dust producing material (cement, bentonite, lime, etc. ) shall be removed daily.
- Combustible materials shall be properly stored;
- All spills of fuel, oil, solvents, or other flammable, dangerous or toxic material shall be cleaned up immediately and the spoils placed in containers marked as hazardous.
- Brush, long grass or other materials that may present a fire hazard shall be cleared before motorized equipment will be used.
- Excess scrap material and rubbish shall be promptly removed from the work area.
- PPE shall be returned to the designated storage area at the end of the work period or shall be placed in designated disposal receptacles.

**18.10. EXCAVATION SAFETY RULES**

A partial list of excavation safety rules include CLEAN II SOP 5.1.6, "Excavation and Trenching," SOP 5.1.2, "Confined Space Entry," and SOP 5.1.4, "Utility Clearance." Applicable state requirements and USACE EM 385-1-1 shall also be consulted for full details. Refer to Section 6 for a discussion of hazards and Section 10 for monitoring requirements.

The following specific requirements shall be followed for shallow test pits that personnel may enter (also see 6.6.2 and 6.6.3).

- Entry is limited to pits with a maximum depth of 5 feet at any point.
- All excavations shall be inspected by a competent person and the SHSO prior to entry; the competent person shall determine that no potential for cave-in exists and that protective systems are not required for entry.
- A separate HWP shall be prepared for each test pit.

- Excavations that remain open shall be inspected daily by a competent person and as needed following rain or other hazard increasing activity. Daily inspections shall be documented in writing.
- Spoils shall be kept at least two feet back from the edge of the pit.
- Stairs, ramps, or ladders shall be provided for pits greater than four feet in maximum depth.
- Pits shall be back-filled immediately after completion of work.
- Perimeter protection shall consist of warning barricades or flagging at least six feet from the edge of the excavation at a height of three to four feet above ground. Standard exclusion-zone barrier tape is acceptable provided entry signs indicate that excavation is in progress.
- Contact the SHSO for special protection requirements for pits that must remain open overnight.

#### **18.11. BURIED DRUM HANDLING PROCEDURE**

Refer to section 28. H of USACE EM 385-1-1 for drum handling procedures. The HSS shall prepare special procedures if drums are identified on the site and sampling, handling or inspection is required.

## VISITOR ACCESS REQUIREMENTS

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### 19.1. GENERAL

Site visitors are defined as those (1) who are not employed at the project site, (2) who do not routinely enter restricted work areas, (3) whose presence is of short duration (i.e., one to two days per month), and (4) specialized technical personnel whose core business is not hazardous waste, but their expertise is required on short notice for brief periods. Since visitors will not spend a significant amount of time in restricted work areas, they are not required to meet all aspects of the HASP as are site workers. These visitors may include Program personnel, commercial vendors, representatives of political subdivisions, and auditors or inspectors from local, state, or federal agencies.

This HASP and the CLEAN II SOPs establish the policies and procedures necessary to protect workers and the public from potential risks. The elements of these plans include programmatic requirements such as medical surveillance, exposure monitoring, training, personal protective apparel and equipment, and notification requirements. These safety and health plans adhere to federal regulations promulgated by OSHA and EPA. Site-specific conditions and any special requirements for the protection of visitors are incorporated into HASPs.

### 19.2. GENERAL REQUIREMENTS

The following requirements apply to visitors whose purpose is to observe site conditions or field activities.

- The SHSO will be notified of the nature and duration of the visit before visitors are permitted to enter a restricted work area.
- The visitor's log will be completed, including the individual's name, the date, and the name of the company or agency represented.
- The site visitor will be escorted by a Program representative at all times while in restricted work areas of the site. The SHSO, or his designee, will escort visitors whenever restricted work areas are entered.
- Visitors will comply with specific safety and health requirements described in the following subsections, when applicable.

**19.2.1. Medical Surveillance**

Each visitor will be required to undergo an occupational health assessment examination or show proof of an annual medical examination if the visitor requests access into a restricted work area where respirators are required. The visitor must also show proof of a recent medical examination if he plans to participate directly in restricted work area activities during which the potential for exposure exists. A visitor who cannot provide a physician's statement or other acceptable documentation stating that he is physiologically qualified to work with hazardous materials and to wear a negative-pressure respirator (if such use is required) will be restricted from entry where exposure is possible. Any special tests identified in the SHSP will be administered to visitors.

**19.2.2. Training Requirements**

All visitors, even if escorted, must be briefed on the site-specific health and safety program (e.g., potential hazards and safety procedures) before entering restricted work areas. Visitors will not be permitted into restricted work areas unless they have been respirator-trained (if such use is required), medically approved, and fit-tested. Any visitor entering the exclusion zone **MUST** meet the medical and training requirements.

**19.2.3. Specific requirements for local, state, and federal inspectors**

Local, state, and federal inspectors who will enter into a restricted area will meet the requirements for general visitors specified in Subsection 14.1. Additional requirements and special provisions are as follows.

- When required, inspectors will wear PPE provided by their respective organization. The inspectors will not be allowed to use their personally owned protective equipment.
- If special tests are required under the site-specific medical surveillance program, the inspector will be responsible for adhering to these requirements, and his agency will be responsible for the associated costs.
- Costs associated with respiratory quantitative fit-testing (when required) will be borne by the inspector's agency.

**19.3. NAVY VISITORS**

Navy personnel should provide a letter or identification card indicating they are current with respect to hazardous waste site access requirements, with

indication of expiration date. This will permit site access without the need for the SHSO to verify that the access requirements have been satisfied.

The SHSO shall presume that Navy or government emergency-response personnel are current with respect to qualifications and shall not delay access.

## Section 20

# PERSONNEL REQUIREMENTS

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### 20.1. PERSONNEL EXPECTATIONS

All personnel assigned to work on this Project are expected to read and be familiar with this plan, the SWDIV CLEAN II Project Health and Safety Procedures and Standard Operating Procedures, and their company safety requirements.

All personnel are expected to fully comply with all rules and regulations set forth in the above documents.

All personnel are expected to report to work, ready to work, and free from influence of alcohol, illegal or controlled substances, or prescription or nonprescription pharmaceuticals that may affect their ability to work safely.

All personnel shall report to work, with all safety gear required for anticipated tasks. The Program will not provide or loan hard hats, safety glass, boots, or gloves to subcontractors.

All personnel are required to report all injuries and incidents, even if considered minor.

All personnel are required to comply with the buddy system requirements within controlled access areas.

All personnel are required to follow the direction of the SHSO on safety or health matters, stop work orders, or emergency evacuations.

All personnel will be required to sign acknowledgment of training received on the project and an agreement to follow all rules and regulations.

Eating, drinking, smoking, chewing, etc., will not be tolerated in controlled areas.

## Section 21

# SPILL CONTROL AND CONTAINMENT REQUIREMENTS

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### 21.1. SPILL CONTROL AND CONTAINMENT

Chemicals or hazardous substances could be spilled during site tasks as a result of:

- transportation accidents;
- improper packaging practices;
- rupturing of tanks, drums, or other storage containers; or
- improper handling of hazardous materials during off-loading.

The emergency plan will be activated in the event of unplanned spills of hazardous or unknown substances. In the event of any spill at site, the field team leader and SHSO are to be notified immediately by whoever first witnesses the emergency event.

As soon as a spill is discovered, all nonessential workers should evacuate the immediate area to reduce the likelihood of spreading contamination or being exposed to contamination.

The designated emergency-response personnel will proceed to the spill area with the appropriate equipment. Spill equipment that will be maintained for this task is listed in Section 16.

While the ERT is cleaning up the spill, the SHSO will monitor for exposures to chemicals or hazardous substances. The SHSO will determine the appropriate PPE and will identify the spill area as restricted. The SHSO will provide technical guidance to the ERT as needed.

The SHSO will direct spill response and will stay at the spill area until the area has been cleaned, surveyed, and readied for release. The Project Manager will approve release of the site and will issue a final release report of the area. The SHSO will document the spill on an Incident Report in accordance with PP HS 2.2, which will be forwarded to the HSS supervisor.

**21.2. EMERGENCY RESPONSE CALL-OUT**

In the event of an emergency event, the activity-designated point of contact (POC) will be notified. Depending upon the activity and nature of the emergency, the following individuals will be notified of events with environmental consequences:

1. ROICC
2. Environmental Coordinator
3. Public Works POC
4. Command Duty Officer (if the others cannot be reached)

If a contact cannot be reached, contact the next person and advise him of which contacts were unavailable.

# **ATTACHMENT I**

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## **HEALTH AND SAFETY PROCEDURES**

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## VOLUME 4

Revision No.

**HEALTH & SAFETY (HS Series)**

HS 1.1	Health and Safety Program Plans.....	0
HS 1.2	Number Not Used.....	-
HS 1.3	Medical Surveillance Program.....	0
HS 1.4	Training Program.....	0
HS 1.5	Health and Safety Records.....	0
HS 1.6	Injury and Illness Reporting.....	0
HS 1.7	Number Not Used.....	-
HS 1.8	OSHA Inspections.....	0
HS 1.9	Hazard Communication Program.....	0
HS 2.1	Emergency Planning.....	0
HS 2.2	Emergency Response and Follow Up.....	0
HS 2.3	First Aid.....	0
HS 3.1	Respiratory Protection.....	0
HS 3.2	Personal Protective Equipment.....	0
HS 3.3	Hearing Conservation.....	0
HS 4.1	Number Not Used.....	-
HS 4.2	Number Not Used.....	-
HS 4.3	Decontamination.....	0
HS 4.4	Hazard Monitoring Program.....	Draft
HS 5.1	Field Safety Program.....	0
HS 6.1	Number Not Used.....	-
HS 6.2	Radiation Protection (Use SHP 2.1.110 for interim).....	Pending

## SHP Bechtel Corporation Safety and Health Manual Procedures

**HEALTH AND SAFETY SOP's**

SOP 1.1.1	Health and Safety Organization and Responsibilities.....	0
SOP 1.1.2	Site Health and Safety Officer Responsibilities.....	0
SOP 1.1.3	Selection, Designation, and Training of Site H&S Officers.....	0
SOP 1.2.1	Field Revision of Health and Safety Plans.....	0
SOP 1.3.1	Program Exposure Limits.....	0

## VOLUME 4

Revision No.

SOP 1.4.1	Site Worker Orientation.....	0
SOP 1.4.2	Initial Site Visit.....	Draft
SOP 1.5.1	Maintenance of Training Records .....	0
SOP 1.5.2	Medical Surveillance Records .....	Reserved
SOP 1.5.3	Personal Exposure Records.....	Reserved
SOP 1.5.4	Biological Monitoring .....	Draft
SOP 1.5.5	Personal Monitoring Procedure.....	0
SOP 3.1.1	Respirator Selection.....	0
SOP 3.1.2	Respirator Fit Testing.....	0
SOP 3.1.3	Respirator Maintenance .....	0
SOP 3.1.4	Respirator User Training .....	0
SOP 3.1.5	Breathing Air Systems.....	0
SOP 4.1.1	Job Hazard Analysis.....	0
SOP 4.3.1	Personal Decontamination .....	0
SOP 4.4.1	Number Not Used	
SOP 4.4.2	PID Instrument Operation.....	Draft
SOP 4.4.3	FID Instrument Operation.....	Draft
SOP 4.4.4	Explosive Gases and Flammability Monitoring.....	TBD by Need
SOP 5.1.1	Hazardous Work Permit .....	0
SOP 5.1.2	Confined Space Entry (Use SHP 1.14.4 for interim) .....	Pending
SOP 5.1.3	Lockout/Tagout (Use SHP 1.14.9 for interim) .....	Pending
SOP 5.1.4	Utility Clearance .....	0
SOP 5.1.5	Number Not Used.....	-
SOP 5.1.6	Excavation and Trenching (Use SHP 1.14.7 for interim).....	Pending
SOP 5.1.7	Vehicle and Heavy Equipment Safety .....	0
SOP 5.1.8	Electrical Equipment, Classified Areas and Systems Safety.....	0
SOP 5.1.9	Ladders and Scaffolds (Use SHP 1.14.3 for interim) .....	Pending
SOP 5.1.10	Hand and Portable Power Tools .....	Reserved
SOP 5.1.11	UXO (Unexploded Ordnance) .....	Reserved
SOP 5.1.12	Buried Drums .....	Reserved
SOP 5.1.13	Site Control.....	0
SOP 5.1.14	Housekeeping .....	0
SOP 5.1.15	Asbestos Sampling and Handling .....	Reserved
SOP 5.1.16	Welding and Cutting Safety.....	0
SOP 5.1.17	Heat Stress Control and Evaluation .....	Reserved
SOP 5.1.18	Benzene Regulated Areas .....	Reserved
SOP 6.2.1	Field Radiation Surveys .....	0

**JOB 22214  
NAVY CLEAN II  
COMMUNICATION DISTRIBUTION**

Comm Control No.: pmo-1344  
 Date: 7/20/94  
 File Code: 13025  
 Subject: H+S Plan, Rev 1  
Final

Incoming/Outgoing  
 Fax \_\_\_\_\_  
 Regular Mail \_\_\_\_\_  
 Overnight \_\_\_\_\_  
 Second Day \_\_\_\_\_  
 Hand Carry \_\_\_\_\_

PMO	Route	Copy	CTO PMs	Route	Copy	OTHER	Route	Copy
J. A. Moe		X				<b>Brown &amp; Caldwell</b>		
J. W. Kluesener		X	E. Houle (San Diego)		X	V. Bedl		X
J.M. Gilbert		2	K. Kapur (Long Beach)		X	B. Schmucker (CTO-047/052)		X
B. T. Kown		X	E. Randall (San Pedro)		X	<b>Kleinfelder</b>		
A. S. Masvidal		X	D. Umstot (Salton Sea)		X	J. Jackson		X
J. L. Matthews		X	S. Drew (Public Relations)		X	B. Felix (CTO-0046)		X
M.L. McKee		X	H. Masri (Tustin)		X	<b>Bechtel</b>		
C.I. Sherman		X	R. Hughes (CTO-045/051)		X	J. R. Kannard		
J. Howe		X	D. Cowser (CTO-059)		X	L.K. Donovan		
						G. Jiggetts		
						J. Solinsky		
<b>CTOLS</b>			<b>CTOLS</b>			R. Jordan		
			W. Shipman (CTO-11/36/61)		X	J. McKinnon		
E. Morelan (CTO-0015)		X	N. Kawamoto (CTO-0013)		X	J. Pharis		
W. Remsen (CTO-16/26)		X	M. Tagoe (CTO-031/064)		X	K. Sims		X
A. Gessesse (CTO-27/28/43)		X	C. Fenner (CTO-0010)		X	S. Walde		X
S. Livenick (CTO-0037)		X	D. McCullar (CTO-0029/32)		X	R. Brounstein		X
K. Stevens (CTO-0017/41)		X	J. White (CTO-0038)		X	D. Tedaldi (CTO-0048)		X
C. McGinnis (CTO-0058)		X	J. Argyres (CTO-0003)		X	B. Hernandez		
E. Vander Velde (CTO-0023)		X	J. Kozakowski (CTO-0009)		X	D. Cheatham		
A. Franks (CTO-0067)		X	D. Liu (CTO-0034)		X	G. Betzner		
			W. Meyers (CTO-0049)		X	R. Matuszewski		
DCC Master File		X	P. Chopan (CTO-0039)		X	<i>on file</i>		X
Program Library		X	E. Houle (CTO-008/050)		X	<i>J. Heskett</i>		X
			B. Coleman (CTO-0057)		X	<i>J. Levy</i>		X
			E. Neishem (CTO-0056)		X	<i>J. Davidson</i>		X
			B. Bosshard (CTO-0055)		X	<i>J. Ledy</i>		X
			J. Glaze (CTO-0062)		X	<i>J. Brown</i>		X

**Action Required:** Yes  No  *S. Donovan*  
 Response Due From: \_\_\_\_\_ *M. Kahane*  
 Due Date: \_\_\_\_\_ *P. ...*  
 Closes Action Item: \_\_\_\_\_ *R. ...*

(2)  
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(18)  
(3)  
(3)

Notes:

# Bechtel

## Interoffice Memorandum

To: Distribution

File: IOM

Subject: Health and Safety Plan, Revision 1, Final

Date: July 19, 1994

From: C. I. Sherman

Of: Navy CLEAN Health and Safety

Copies to: E. F. Gilley  
J. R. Kannard w/o

At: San Diego Ext: 687-8711

Subject plan is forwarded for your use. This plan incorporates Navy comments and will be issued to each field subcontractor shortly.

Twenty copies have been provided to SWDIV for internal use.

I will be working to implement a coordinated approach to gaining acceptance of this plan by the regulatory agencies, so that additional reviews are only required of the site-specific supplements. Any thoughts on how to do this are welcome



C. I. Sherman

CIS/cis

Attachment:

Distribution:

PMOM

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CTO Leaders



*A Rule Breaker Is An Accident Maker*