

8.16 Worker Health and Safety

This section summarizes the worker health and safety issues that may be encountered during the construction and operation of the proposed project. Due to the subject matter, this section follows a slightly different format than other sections in Chapter 8. Instead of a standard discussion of affected environment, followed by the project's environmental consequences and proposed mitigation measures for significant impacts, this section contains worker safety information including the laws, ordinances, regulations, and standards (LORS) that apply to this project. Section 8.16.1 is a brief description of the work environment and setting. Additional information is available in the project description chapters (1 through 7). Section 8.16.2 describes the health and safety programs in terms of analyses conducted to identify hazards and also the safety compliance and training programs that will be established on site. Section 8.16.3 discusses the applicable LORS. Section 8.16.4 lists the regulatory agencies involved and key agency contacts. Section 8.16.5 presents permits required and their permitting schedules.

8.16.1 Setting

The project will consist of the installation and operation of ten natural gas-fired Wärtsilä 18V50DF reciprocating engine-generator sets and associated equipment. The project will be constructed over a 18-month period on Buhne Point, approximately 3 miles south of the City of Eureka in Humboldt County. It will be operated for a period of 30 years or more.

One aspect of Humboldt Bay Repowering Project (HBRP) construction and operation that is dissimilar to comparable projects is that project construction and operation will take place adjacent to and within the same owner-controlled parcel as the inactive nuclear power plant, Humboldt Bay Power Plant Unit 3. Unit 3 has been out of operation since 1976 and Pacific Gas and Electric Company (PG&E) currently maintains it under a Nuclear Regulatory Commission SAFSTOR license, which allows for safe storage of nuclear materials pending final decommissioning and demolition. Future activities for Unit 3 include construction of the Independent Spent Fuel Storage Installation (ISFSI), also known as the dry cask storage system, and the eventual full decommissioning and demolition of Unit 3 and ancillary facilities. The ISFSI is an underground concrete vault designed to safely store Unit 3's spent fuel rods on the Humboldt Bay Power Plant property, and is licensed for 20 years. The ISFSI will be constructed beginning in 2007 at a location north of Units 1 and 2, and the fuel rods will be transferred to the storage vault in 2008. Once the spent fuel rods are safely stored in the ISFSI vault, final decommissioning and demolition of Unit 3 can begin. This process may take as many as 10 to 12 years.

Neither ISFSI construction and maintenance, nor the decommissioning and demolition of Unit 3 are part of the HBRP project. Unit 3 decommissioning activities, however, will take place adjacent to the HBRP site. For this reason, worker health and safety plans (HSPs) and procedures for the HBRP will need to take the presence of Unit 3 and its decommissioning program into consideration.

Generally speaking, however, it will not be necessary for either the HBRP construction or operation workforce to take special protective measures to avoid radiological contamination and ensure radiological safety. Based on previous studies and PG&E's on-going radiological

dosimetric monitoring, the HBRP project area currently meets the Nuclear Regulatory Commission's (NRC's) standards for public use (Albers, 2006). In addition, the entire HBRP project site (portions of the Humboldt Bay Power Plant parcel that will be dedicated to the HBRP) will undergo detailed radiological contamination studies before construction begins. These studies will be conducted under the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) methodology (NUREG-1575) and in accordance with NRC guidelines (see further discussion in Section 8.14, Waste Management). If it is necessary to remove contaminated soil as a remedial measure, this would be completed before HBRP construction begins. This remedial action, if necessary, would be done under the jurisdiction of the NRC and under the auspices of the Unit 3 decommissioning program. The additional work being conducted on the HBRP site as part of the MARSSIM study to prepare the site for NRC release will fully document that HBRP construction workers and operators will not be exposed to radiation doses above normal background levels that are acceptable for the general public and that no special safety measures or exposure limits would be required during HBRP construction or operation.

All HBRP construction and operations workers will receive a site-specific training module that will cover the existing plant's emergency response procedures, incident warning signals (fire, tsunami, etc.), and other general safety procedures. Specific radiological training will not be necessary and need not be administered to the HBRP construction and operation staff because HBRP construction and operation staff will not be authorized to enter the Unit 3 radiologically controlled area (RCA) at any time. This RCA is protected by secure fencing and postings which limit access. HBRP construction and operation workers will not participate in the decommissioning or demolition of Unit 3 as part of the HBRP project.

The existing plant's emergency response procedures apply to events such as strong seismic shaking or tsunami. Employees are trained what to do and where to go when certain alarms and warning signals are broadcast. Visitors are trained as well and given badges with color coded symbols to ensure that during such events gathering locations and high ground are identified so that people can move safely to areas that are safe from such hazards. These procedures will continue for the construction and permanent workforce for the HBRP.

8.16.2 Health and Safety Programs

8.16.2.1 Environmental Checklist

Impacts would generally be evaluated with respect to the California Environmental Quality Act (CEQA) checklist. The CEQA checklist does not have specific questions for worker health and safety. Related questions are addressed in the Hazardous Materials Management and Noise sections.

8.16.2.2 Hazard Analysis

Workers will be exposed to construction and plant operation safety hazards. A hazard analysis is included below to evaluate these hazards and assess control measures. The analysis identifies the hazards anticipated during construction and operation, and indicates which safety programs should be developed and implemented to mitigate and appropriately manage those hazards. The hazard analysis for construction activities is presented in Table 8.16-1; the hazard analysis prepared for plant operation is presented in

Table 8.16-2. Because the types of hazards anticipated during plant construction and operation are similar, there is some duplication between the tables.

Programs are overall plans that set forth the method or methods that will be followed to achieve particular health and safety objectives. For example, the Fire Protection and Prevention Program will describe what has to be done to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures to follow to protect against fires. The Emergency Action Program/Plan will describe escape procedures, rescue and medical procedures, alarm and communication systems, and response procedures for every hazardous material that can migrate, such as aqueous ammonia. The programs or plans are set forth in written documents that are usually kept at specific locations within the facility.

Each program or plan will contain training requirements that are translated into detailed training courses. These courses are taught to plant construction and operating personnel, as needed. For example, all plant operating personnel will receive training in escape procedures under the Emergency Action Program/Plan, but only those working with flammables will receive training under the Fire Protection and Prevention Program.

Tables 8.16-1 and 8.16-2, which list construction and operation activities and associated hazards, also show (under the "Control" column) the program designed to reduce the occurrence of each hazard.

TABLE 8.16-1
Construction Hazard Analysis

Activity	Hazard*	Control
Motor vehicle and heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle and Heavy Equipment Safety Program
Forklift operation	Same as heavy equipment	Forklift Operation Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Prevention Program Scaffolding/Ladder Safety Program Articulating Boom Platforms Program
Use of cranes and derricks	Property damage from falling loads; employee injuries from falling loads; and injuries and property damage from contact with crane or derrick	Crane and Material Handling Program
Working with flammable and combustible liquids	Fire/spills	Fire Protection and Prevention Program; Housekeeping and Material Handling and Storage Program

TABLE 8.16-1
Construction Hazard Analysis

Activity	Hazard*	Control
Hot work (including cutting and welding)	Employee injury and property damage from fire; exposure to fumes during cutting and welding; ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Safety Program; Respiratory Protection Program; Employee Exposure Monitoring Program; Personal Protective Equipment Program
Demolition of existing structures	Employee injury and property damage associated with falling objects, crushing hazards, and exposure to underground and aboveground utilities	Demolition Safety Procedure
Inspection and maintenance of temporary systems used during construction activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program General Lock-out/Tag-out (LO/TO) Program
Inspection, maintenance and repair of equipment used during construction activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program General LO/TO Program
Working on electrical equipment and systems	Employee contact with live electricity and energized equipment	Electrical Safety Program; Personal Protective Equipment Program
Working near high voltage lines	Employee contact with live electricity	Electrical Safety Program; Personal Protective Equipment Program
Exposure to hazardous materials	Personnel who are working with or have the potential to be exposed to contaminated soil, groundwater, or debris during construction	Hazardous Waste Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required; Confined-Space Entry Program
General construction activity	Employee injury from hand and portable power tools	Hand and Portable Power Tool Safety Program; Personal Protective Equipment Program
General construction activity	Employee injury/property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
General construction activity	Employee exposure to occupational noise	Hearing Conservation Program Personal Protective Equipment Program
General construction activity	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
General construction activity	Employee injury to head, eye/face, hand, body, foot, and skin	Personal Protective Equipment Program

TABLE 8.16-1
Construction Hazard Analysis

Activity	Hazard*	Control
General construction activity	Employee exposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program; Respiratory Protection Program; Personal Protective Equipment Program; Air Monitoring Program
General construction activity	Employee exposure to various hazards; reporting of hazardous conditions during construction	Injury and Illness Prevention Program
General construction activity	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program
General demolition activity	Lead and asbestos hazards	Lead and Asbestos Program
Construction and testing of high-pressure steam and air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure Vessel and Pipeline Safety Program; Electrical Safety Program

* The hazards and hazard controls provided are generic to construction activities. During various phases of construction, a hazard analysis will be performed to more specifically evaluate the relevant hazards and to develop appropriate controls.

TABLE 8.16-2
Operation Hazard Analysis

Activity	Hazard*	Control
Motor vehicle and heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor Vehicle and Heavy Equipment Safety Program
Forklift operations	Same as heavy equipment	Forklift Operation Program
Trenching and excavation	Employee injury and property damage from the collapse of trenches and excavations	Excavation/Trenching Program
Working at elevated locations	Falls from the same level and elevated areas	Fall Protection Program; Scaffolding/Ladder Safety Program
Use of cranes or derricks	Property damage from falling loads, employee injuries from falling loads, injuries and property damage from contact with crane or derrick	Crane and Material Handling Program
Working with flammable and combustible liquids	Fire/spills	Fire Protection and Prevention Program
Working with hazardous materials	Employee injury due to ingestion, inhalation, dermal contact	Hazard Communication Program

TABLE 8.16-2
Operation Hazard Analysis

Activity	Hazard*	Control
Hot work (including cutting and welding)	Employee injury and property damage from fire; exposure to fumes during cutting and welding; ocular exposure to ultraviolet and infrared radiation during cutting and welding	Hot Work Safety Program; Respiratory Protection Program; Employee Exposure Monitoring Program; Personal Protective Equipment Program; Fire Protection and Prevention Program
Troubleshooting and maintenance of plant systems and general operational activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program General LO/TO Program
Inspection, maintenance and repair of equipment	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical Safety Program General LO/TO Program
Working on electrical equipment and systems	Employee contact with live electricity	Electrical Safety Program; Personal Protective Equipment Program
Working near high voltage lines	Employee contact with live electricity	Electrical Safety Program; Personal Protective Equipment Program
Confined space entry	Employee injury from physical and chemical hazards	Permit-Required; Confined-Space Entry Program
General plant operation activities	Employee injuries from hand and portable power tools	Hand and Portable Power Tool Safety Program; Personal Protective Equipment Program
General plant operation activities	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping and Material Handling and Storage Program
General plant operation activities	Employee overexposure to occupational noise	Hearing Conservation Program; Personal Protective Equipment Program
General plant operation activities	Employee injury from improper lifting and carrying of materials and equipment	Back Injury Prevention Program
General plant operation activities	Employee injury and property damage from unsafe driving	Safe Driving Program
General plant operation activities	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazard Communication Program; Respiratory Protection Program; Personal Protective Equipment Program; Employee Exposure Monitoring Program
General plant operation activities	Reporting and repair of hazardous conditions	Injury and Illness Prevention Program
General plant operation activities	Heat and cold stress	Heat and Cold Stress Monitoring and Control Program
General plant operation activities	Ergonomic injuries	Ergonomic Awareness Program

TABLE 8.16-2
Operation Hazard Analysis

Activity	Hazard*	Control
Maintenance and repair of high-pressure steam and air systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure Vessel and Pipeline Safety Program; Electrical Safety Program
Ammonia storage	Ammonia release	Emergency Action Program/Plan; Risk Management Plan (RMP) (see Section 8.12)

* The hazard and hazard controls provided are generic to operational activities. This hazard analysis may have to be updated if plant operations change or new equipment is added that was not considered during this evaluation.

8.16.2.3 Training and Safety Programs

To protect the safety and health of workers during the construction and operation of the HBRP, health and safety programs designed to mitigate hazards and comply with applicable regulations will be implemented. Periodic audits will be performed by qualified individuals to determine whether proper work practices are being used to mitigate hazardous conditions and to evaluate regulatory compliance.

The following subsections contain information on the anticipated content of the health and safety programs.

8.16.2.3.1 Construction Health and Safety Program

The following construction safety programs will be developed and implemented during construction of the HBRP as outlined in the following lists.

Injury and Illness Prevention Program

- Philosophy and safety commitment
- Safety leadership and responsibilities
- Accountability
- Specific core safety processes (see Construction Safety Programs later in this section)
- Employee communication
- Planning “job hazard analysis and pre-task”
- Compliance with work rules and safe work practices
- Measurement of compliance and effectiveness of prevention methods
- Communication of performance and implementation of necessary improvements
- Training and other communication requirements

Fire Protection and Prevention Program

- General requirements
- Housekeeping and proper material storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control and containment

- Flammable and combustible liquid storage
- Dispensing and disposal of flammable liquids
- Service and refueling areas
- Training

Personal Protective Equipment Program

- Personal protective devices
- Head protection
- Eye/face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Fall protection
- High-voltage protection
- Respiratory protection
- Hearing protection
- Hazard analysis
- Training

Emergency Action Program/Plan

Emergency procedures for the protection of personnel, equipment, the environment, and materials:

- Fire and emergency reporting procedures
- Response actions for accidents involving personnel and/or property
- Bomb threat response procedures
- Site assembly and emergency evacuation route procedures during events including earthquakes and tsunami
- Natural disasters response during and after events including earthquakes and tsunami

Reporting and notification procedures for emergencies and contacts, including offsite and local authorities:

- Alarm and communication systems
- Spill response, prevention, and control action plan
- Emergency response equipment
- Emergency personnel (response team) responsibilities and notification roster
- Training requirements

Construction Safety Programs

- **Motor Vehicle and Heavy Equipment Safety Program**
 - Operation and maintenance of vehicles
 - Inspection
 - Personal protective equipment (PPE)
 - Training
- **Forklift Operation Program**
 - Trained and certified operators

- Fueling operations
- Safe operating parameters
- Training
- **Excavation/Trenching Program**
 - Shoring, sloping, and benching requirements
 - California Occupational Safety and Health Administration (Cal-OSHA) permit requirements
 - Inspection
 - Air monitoring
 - Access and egress
- **Fall Protection Program**
 - Evaluation of fall hazards
 - Protection devices
 - Training
- **Scaffolding/Ladder Safety Program**
 - Construction and inspection of equipment
 - Proper use
 - Training
- **Articulating Boom Platforms Program**
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Operator training
- **Crane and Material Handling Program**
 - Certified and licensed operators
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Training
- **Hazardous Waste Program**
 - Evaluation of hazard
 - Training
 - Air monitoring
 - Medical surveillance
 - HSP preparation
- **Hot Work Safety Program**
 - Welding and cutting procedures
 - Fire watch
 - Hot work permit
 - PPE
 - Training

- **Employee Exposure Monitoring Program**
 - Exposure evaluation
 - Monitoring requirements
 - Reporting of results
 - Medical surveillance
 - Training
- **Electrical Safety Program**
 - Grounding procedure
 - Lock-out/tag-out (LO/TO) procedures
 - Overhead and underground utilities
 - High-voltage lines
 - Utility clearance
 - Training
- **General LO/TO Program**
 - Equipment Evaluation
 - Equipment specific LO/TO procedures
 - Periodic inspection
 - Training
- **Permit-Required Confined Space Entry Program**
 - Air monitoring and ventilation requirements
 - Rescue procedures
 - LO/TO and blocking, blinding, and blanking requirements
 - Permit completion
 - Training
- **Hand and Portable Power Tool Safety Program**
 - Guarding and proper operation
 - Training
- **Housekeeping and Material Handling and Storage Program**
 - Storage requirements
 - Walkways and work surfaces
 - Equipment handling requirements
 - Training
- **Hearing Conservation Program**
 - Identifying high-noise environments
 - Exposure monitoring
 - Medical surveillance requirements
 - Hearing-protective devices
 - Training
- **Lead and Asbestos Program**
 - Exposure monitoring
 - Medical surveillance requirements
 - Training

- **Back Injury Prevention Program**
 - Proper lifting and material handling procedures
 - Training
- **Hazard Communication Program**
 - Labeling requirements
 - Storage and handling
 - Material safety data sheets (MSDS)
 - Chemical inventory
 - Training
- **Respiratory Protection Program**
 - Selection and use
 - Storage
 - Fit testing
 - Medical requirements
 - Inspection and repair
 - Training
- **Heat and Cold Stress Monitoring and Control Program**
 - Monitoring requirements
 - Prevention and control
 - Provisions for water and shade (heat illness prevention)
 - Training
- **Pressure Vessel and Pipeline Safety Program**
 - Line-breaking program
 - Equipment inspection and maintenance
 - Blocking, bleeding, and blanking
 - Training
- **Subcontractor/External Visitors HSP**
 - Contracts (T&Cs)
 - Communication
 - Training

8.16.2.3.2 Operation HSP

Upon completion of construction and commencement of operations at HBRP, the construction safety and health program will transition into an operations-oriented program reflecting the hazards and controls necessary during operation and maintenance. The following outline sets forth the topics that will be included in the Operations HSP.

Injury and Illness Prevention Program

- Personnel with the responsibility and authority for implementing the plan
- Safety and health policy
- Work rules and safe work practices
- System for ensuring that employees comply with safe work practices
- Employee communications
- Identification and evaluation of workplace hazards

- Methods and/or procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the severity of the hazards
- Specific safety procedures (see Plant Operation Safety Program)
- Training and instruction

First Aid, CPR, and Automated External Defibrillator

- General requirements
- Written program
- Training
- Maintenance

Fire Protection and Prevention Program

- General requirements
- Fire hazard inventory, including ignition sources and mitigation
- Housekeeping and proper materials storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensation and disposal of liquids
- Training
- Personnel to contact for information on plan contents

Emergency Action Program/Plan (Part of the RMP)

- Emergency escape procedures and emergency escape route assignments during events such as earthquakes and tsunami
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for those employees performing rescue and medical duties
- Fire and emergency reporting procedures
- Alarm and communication system
- Personnel to contact for information on plan contents
- Response procedure for ammonia release
- Training requirements

Personal Protective Equipment Program

- Hazard analysis and prescription of PPE
- Personal protective devices
- Head protection
- Eye and face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection

- Sanitation
- Safety harnesses and life lines for fall protection
- Protection for electric shock
- Medical services and first aid/bloodborne pathogens
- Respiratory protective equipment
- Hearing protection
- Training

Plant Operation Safety Program

- **Motor Vehicle and Heavy Equipment Safety Program**
 - Operation and maintenance of vehicles
 - Inspection
 - Personal protective equipment
 - Training
- **Forklift Operation Program**
 - Trained and certified operators
 - Fueling operations
 - Safe operating parameters
 - Training
- **Excavation/Trenching Program**
 - Shoring, sloping, and benching requirements
 - Cal-OSHA permit requirements
 - Inspection
 - Air monitoring
 - Access and egress
- **Fall Protection Program**
 - Evaluation of fall hazards
 - Protection devices
 - Training
- **Scaffolding/Ladder Safety Program**
 - Construction and inspection of equipment
 - Proper use
 - Training
- **Articulating Boom Platforms Program**
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters
 - Operator training
- **Crane and Material Handling Program**
 - Certified and licensed operators
 - Inspection of equipment
 - Load ratings
 - Safe operating parameters

- Training
- **Hot Work Safety Program**
 - Welding and cutting procedures
 - Fire watch
 - Hot work permit
 - PPE
 - Training
- **Workplace Ergonomics Program**
 - Identification of personnel at risk
 - Evaluation of personnel
 - Workplace and job activity modifications
 - Training
- **Employee Exposure Monitoring Program**
 - Exposure evaluation
 - Monitoring requirements
 - Reporting of results
 - Medical surveillance
 - Training
- **Electrical Safety Program**
 - Grounding procedure
 - LO/TO procedures
 - Overhead and underground utilities
 - High-voltage lines
 - Utility clearance
 - Training
- **General LO/TO Program**
 - Equipment evaluation
 - Equipment specific LO/TO procedures
 - Periodic inspection
 - Training
- **Permit-Required Confined Space Entry Program**
 - Air monitoring and ventilation requirements
 - Rescue procedures
 - LO/TO and blocking, blinding, and blanking requirements
 - Permit completion
 - Training
- **Hand and Portable Power Tool Safety Program**
 - Guarding and proper operation
 - Training
- **Housekeeping and Material Handling and Storage Program**
 - Storage requirements

- Walkways and work surfaces
- Equipment handling requirements
- Training
- **Hearing Conservation Program**
 - Identifying high-noise environments
 - Exposure monitoring
 - Medical surveillance requirements
 - Hearing-protective devices
 - Training
- **Back Injury Prevention Program**
 - Proper lifting and material-handling procedures
 - Training
- **Hazard Communication Program**
 - Labeling requirements
 - Storage and handling
 - MSDS
 - Chemical inventory
 - Training
- **Respiratory Protection Program**
 - Selection and use
 - Storage
 - Fit testing
 - Medical requirements
 - Inspection and repair
 - Training
- **Heat and Cold Stress Monitoring and Control Program**
 - Monitoring requirements
 - Prevention and control
 - Provisions for water and shade (heat illness prevention)
 - Training
- **Pressure Vessel and Pipeline Safety Program**
 - Line-breaking policy
 - Equipment inspection and maintenance
 - Blocking, bleeding, and blanking
 - Communication
 - Training
- **Safe Driving Program**
 - Inspection and maintenance
 - Training
- **Subcontractor/External Visitors Health and Safety Program**
 - Contracts (T&Cs)
 - Communication
 - Training

8.16.2.3.3 Safety Training

To ensure that employees recognize and understand how to protect themselves from potential hazards during this project, comprehensive training programs for construction and operation will be implemented as indicated in Tables 8.16-7 and 8.16-8. Each of the safety procedures developed to control and mitigate potential site hazards will require some form of training. Training will be delivered in various ways, depending on the requirements of Cal-OSHA standards, the complexity of the topic, the characteristics of the workforce, and the degree of risk associated with each of the identified hazards.

Tables 8.16-3 and 8.16-4 summarize the safety training programs that will be provided to construction and operations personnel, respectively.

TABLE 8.16-3
Construction Training Program

Training Course	Target Employees
Humboldt Bay Power Plant site-specific safety and emergency response training	All
Injury and Illness Prevention Training	All
Emergency Action Program/Plan	All
Personal Protective Equipment Training	All
Motor Vehicle and Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment or vehicles
Forklift Operation Training	Employees operating forklifts
Excavation/Trenching Safety Training	Employees involved with trenching or excavation
Fall Protection Training	Employees working at heights greater than 6 feet or required to use fall protection
Scaffolding/Ladder Safety Training	Employees required to erect or use scaffolding
Crane Safety Training	Employees supervising or performing crane operations
Fire Protection and Prevention Training	Employees responsible for the handling and storage of flammable or combustible liquids or gases
Hazard Communication Training	Employees handling or working with hazardous materials
Hazardous Waste	Employees handling or excavating hazardous waste
Hot Work Safety Training	Employees performing hot work
Electrical Safety Training	Employees performing LO/TO or working on systems that require LO/TO activities
Electrical Safety Training	Employees required to work on electrical systems and equipment, or use electrical equipment and cords
Permit-Required Confined-Space Entry Training	Employees required to supervise or perform confined-space entry activities
Hand and Portable Power Tool Safety Training	Employees that will be operating hand and portable power tools
Heat Stress and Cold Stress Safety Training	All

TABLE 8.16-3
Construction Training Program

Training Course	Target Employees
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized systems or equipment
Respiratory Protection Training	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All

TABLE 8.16-4
Operations Training Program

Training Course	Target Employees
Humboldt Bay Power Plant site-specific safety and emergency response training	All
Injury and Illness Prevention Training	All
Emergency Action Plan	All
Personal Protective Equipment Training	All
Excavation/Trenching Safety Training	Employees involved with trenching or excavation
Scaffolding/Ladder Safety Training	Employees required to erect or use scaffolding
Fall Protection Training	Employees required to use fall protection
Forklift Operator Training	Employees operating forklifts
Crane Safety Training	Employees supervising or performing crane operations
Workplace Ergonomics	Employees performing repetitive activities
Fire Protection and Prevention Training	Employees responsible for the handling and storage of flammable or combustible liquids or gasses
Hot Work Safety Training	Employees performing hot work
Electrical Safety Training	Employees performing lock out/tag out
Electrical Safety	Employees required to work on electrical systems and equipment
Permit-Required Confined-Space Entry	Employees required to supervise or perform confined-space entry
Hand and Portable Power Tool Safety Training	Employees that will be operating hand and portable power tools

TABLE 8.16-4
Operations Training Program

Training Course	Target Employees
Heat Stress and Cold Stress Safety Training	Employees exposed to temperature extremes
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	Employees supervising or driving motor vehicles
Hazard Communication Training	Employees handling or working around hazardous materials
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized systems or equipment
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Protection and Prevention Training	All
First Aid, CPR, and Automated External Defibrillator	All

8.16.2.4 Fire Protection

Humboldt Fire District, Fire Station 12 located at 755 Herrick Way is located approximately 2 miles from the project site, and would respond in the event of a fire emergency. The response time from Fire Station 12 would be approximately 3 minutes (Ziemer, 2006).

8.16.3 Laws, Ordinances, Regulations, and Standards

HBRP construction, operation, and maintenance will be conducted in accordance with all applicable LORS. Tables 8.16-5 through 8.16-8 summarize the LORS relating to worker health and safety. Table 8.16-5 provides a summary of federal LORS; Table 8.16-6 summarizes the state LORS; Table 8.16-7 lists the local (Humboldt County) LORS; and Table 8.16-8 provides a summary of the applicable national consensus standards.

TABLE 8.16-5
Federal LORS

Law, Ordinance, Regulation, or Standard	Applicability
Title 29 Code of Federal Regulations (CFR) Part 1910*	Contains the minimum occupational safety and health standards for general industry in the United States
Title 29 CFR Part 1926*	Contains the minimum occupational safety and health standards for the construction industry in the United States

* Primary laws and regulations governing worker health and safety in California are provided in Table 8.16-6. These regulations are for reference and apply as referenced by California occupational safety and health regulations. When a particular situation is not addressed by those regulations, the CFR will be consulted for guidance.

TABLE 8.16-6
State LORS

Law, Ordinance, Regulation, or Standard	Applicability
Cal-OSHA, 1970	Establishes minimum safety and health standards for construction and general industry operations in California
8 California Code of Regulations (CCR) 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act
8 CCR 450	Addresses hazards associated with pressurized vessels
8 CCR 750	Addresses hazards associated with high-pressure steam
8 CCR 1509	Addresses requirements for construction, accident, and prevention plans
8 CCR 1509, et seq., and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock
8 CCR 1528, et seq., and 3380, et seq.	Requirements for PPE
8 CCR 1597, et seq., and 1590, et seq.	Requirements addressing the hazards associated with traffic accidents and earth-moving
8 CCR 1604, et seq.	Requirements for construction hoist equipment
8 CCR 1620, et seq., and 1723, et seq.	Addresses miscellaneous hazards
8 CCR 1709, et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations
8 CCR 1920, et seq.	Requirements for fire protection systems
8 CCR 2300, et seq., and 2320, et seq.	Requirements for addressing low-voltage electrical hazards
8 CCR 2395, et seq.	Addresses electrical installation requirements
8 CCR 2700, et seq.	Addresses high-voltage electrical hazards
8 CCR 3200, et seq., and 5139, et seq.	Requirements for control of hazardous substances
8 CCR 3203, et seq.	Requirements for operational accident prevention programs
8 CCR 3270, et seq., and 3209, et seq.	Requirements for evacuation plans and procedures
8 CCR 3301, et seq.	Requirements for addressing miscellaneous hazards, including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or hazardous materials, rotation equipment, pipelines, and vehicle-loading dock operations
8 CCR 3360, et seq.	Addresses requirements for sanitary conditions
8 CCR 3511, et seq., and 3555, et seq.	Requirements for addressing hazards associated with stationary engines, compressors, and portable, pneumatic, and electrically powered tools
8 CCR 3649, et seq., and 3700, et seq.	Requirements for addressing hazards associated with field vehicles
8 CCR 3660, et seq. through 2668	Requirements for operation and use of forklifts
8 CCR 3940, et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment

TABLE 8.16-6
State LORS

Law, Ordinance, Regulation, or Standard	Applicability
8 CCR 5109, et seq.	Requirements for addressing construction accident and prevention programs
8 CCR 5110, et seq.	Requirements for the implementation of an ergonomics program
8 CCR 5139, et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating
8 CCR 5150, et seq.	Requirements for confined space entry
8 CCR 5155, et seq.	Requirements for use of respirators and for controlling employee exposure to airborne contaminants
8 CCR 5160, et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances
8 CCR 5192, et seq.	Requirements for conducting emergency response operations
8 CCR 5193, et seq.	Requirements for controlling employee exposure to blood borne pathogens associated with exposure to raw sewage water and body fluids associated with first aid/CPR duties
8 CCR 5194, et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases
8 CCR 5405, et seq.; 5426, et seq.; 5465, et seq.; 5500, et seq.; 5521, et seq.; 5545, et seq.; 5554, et seq.; 5565, et seq.; 5583, et seq.; and 5606, et seq.	Requirements for flammable liquids, gases, and vapors
8 CCR 5583, et seq.	Requirements for design, construction, and installation of venting, diking, valving, and supports
8 CCR 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; and 6175, et seq.	Fire protection requirements
Title 24, Part 3, California Electrical Code	The Cal-OSHA electrical safety regulations incorporate the requirements of the Uniform Electrical Code located in Title 24, Part 3
8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers
Health and Safety Code Section 25531, et seq.	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed regulated materials prepare and maintain an RMP
Health and Safety Code Section 3395, et seq.	Requires specific provisions for the prevention of heat illness including water, shade, and training
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan (HMBP) that details emergency response plans for a hazardous materials emergency at the facility

TABLE 8.16-7

Local Laws, Ordinances, Regulations, and Standards Required by Humboldt County

Law, Ordinance, Regulation, or Standard	Applicability
Specific hazardous material handling requirements	Provides response agencies with necessary information to address emergencies
Emergency Response Plan	Allows response agency to integrate HBRP emergency response activities into any response actions
Business Plan	Provides response agency with overview of HBRP purpose and operations
RMP (Certified Unified Program Agency [CUPA], administered by the County)	Provides response agency with detailed review of risks and hazards located at HBRP and mitigation implemented to control risks or hazards

TABLE 8.16-8

Applicable National Consensus Standards

Law, Ordinance, Regulation, or Standard	Applicability
Uniform Fire Code, Article 80	Addresses the prevention, control, and mitigation of dangerous conditions related to storage, dispensing, use, and handling of hazardous materials and information needed by emergency response personnel
National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers	Requirements for selection, placement, inspection, maintenance, and employee training for portable fire extinguishers
NFPA 11, Standard for Low-Expansion Foam and Combined Agent Systems	Requirements for installation and use of low-expansion foam and combined-agent systems
NFPA 11A, Standard for Medium- and High-Expansion Foam Systems	Requirements for installation and use of medium- and high-expansion foam systems
NFPA 12, Standard on Carbon Dioxide Extinguishing Systems	Requirements for installation and use of carbon dioxide extinguishing systems
NFPA 13, Standard for Installation of Sprinkler Systems	Guidelines for selection and installation of fire sprinkler systems
NFPA 13A, Recommended Practice for the Inspection, Testing, and Maintenance of Sprinkler Systems	Guidance for inspection, testing, and maintenance of sprinkler systems
NFPA 14, Standard for the Installation of Standpipe and Hose Systems	Guidelines for selection and installation of standpipe and hose systems
NFPA 15, Standard for Water Spray Fixed Systems	Guidelines for selection and installation of water spray fixed systems
NFPA 17, Standard for Dry Chemical Extinguishing Systems	Guidance for selection and use of dry chemical extinguishing systems
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps	Guidance for selection and installation of centrifugal fire pumps
NFPA 22, Standard for Water Tanks for Private Fire Protection	Requirements for water tanks for private fire protection

TABLE 8.16-8

Applicable National Consensus Standards

Law, Ordinance, Regulation, or Standard	Applicability
NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances	Requirements for private fire service mains and their appurtenances
NFPA 26, Recommended Practice for the Supervision of Valves Controlling Water Supplies	Supervision guidance for valves controlling water supplies
NFPA 30, Flammable and Combustible Liquid Code	Requirements for storage and use of flammable and combustible liquids
NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines	Fire protection requirements for installation and use of combustion engines and gas turbines
NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites	Fire protection requirements for hydrogen systems
NFPA 54, National Fuel Gas Code	Fire protection requirements for use of fuel gases
NFPA 59A, Standard for the Storage and Handling of Liquefied Petroleum Gases	Requirements for storage and handling of liquefied petroleum gases
NFPA 68, Guide for Explosion Venting	Guidance in design of facilities for explosion venting
NFPA 70, National Electric Code	Guidance on safe selection and design, installation, maintenance, and construction of electrical systems
NFPA 70B, Recommended Practice for Electrical Equipment Maintenance	Guidance on electrical equipment maintenance
NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces	Employee safety requirements for working with electrical equipment
NFPA 71, Standard for the Installation, Maintenance, and Use of Central Station Signaling Systems	Requirements for installation, maintenance, and use of central station signaling systems
NFPA 72A, Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems for Guard's Tour, Fire Alarm and Supervisory Service	Requirements for installation, maintenance, and use of local protective signaling systems
NFPA 72E, Standard on Automatic Fire Detection	Requirements for automatic fire detection
NFPA 72F, Standard for the Installation, Maintenance and Use of Emergency Voice/Alarm of Communication Systems	Requirements for installation, maintenance, and use of emergency and alarm communications systems
NFPA 72H, Guide for Testing Procedures for Local, Auxiliary, Remote Station and Proprietary Protective Signaling Systems	Testing procedures for types of signaling systems anticipated for facility
NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment	Requirements for fire protection systems used to protect computer systems
NFPA 78, Lightning Protection Code	Lightning protection requirements
NFPA 80, Standard for Fire Doors and Windows	Requirements for fire doors and windows
NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems	Requirements for installation of air conditioning and ventilating systems
NFPA 101, Code for Safety to Life from Fire in Buildings and Structures	Requirements for design of means of exiting the facility

TABLE 8.16-8
Applicable National Consensus Standards

Law, Ordinance, Regulation, or Standard	Applicability
NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants	Guidelines for testing and marking of fire hydrants
NFPA 850, Recommended Practice for Fire Protection for Fossil Fuel Steam Electric Generating Plants	Requirements for fire protection in fossil-fuel steam electric generating plants
NFPA 1961, Standard for Fire Hose	Specifications for fire hoses
NFPA 1962, Standard for the Care, Maintenance, and Use of Fire Hose Including Connections and Nozzles	Requirements for care, maintenance, and use of fire hoses
NFPA 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections	Specifications for fire hose connections
American National Standards Institute/American Society for Mechanical Engineers (ANSI/ASME), Boiler and Pressure Vessel Code	Specifications and requirements for pressure vessels
ANSI, B31.2, Fuel Gas Piping	Specifications and requirements for fuel gas piping

8.16.4 Involved Agencies and Agency Contacts

Several agencies are involved to ensure protection of worker health and safety. Agency contacts relative to worker health and safety and fire defense are shown in Table 8.16-9.

TABLE 8.16-9
Agency Contacts

Agency	Contact Name/Position	Address and Telephone
Humboldt Fire District No. 1 Headquarters	Chief Glenn Ziemer	3455 Harris Street Eureka, CA 95503 (707) 445-4900
Environmental Protection Agency	Duty Officer	75 Hawthorne Street San Francisco, CA 94105 (415) 744-1500
Department of Toxic Substance Control	Duty Officer	700 Heinz Avenue Suite 200 Berkeley, CA 94710-2721 (510) 540-2122
Cal-OSHA Consultation—Redding Office	Duty Officer	381 Hemsted Drive Redding, CA 96002 (530) 224-4743

8.16.5 Permits Required and Permit Schedule

Table 8.16-10 lists applicable permits related to the protection of worker health and safety for HBRP certification. The activities covered and application requirements to obtain each permit are provided.

All permits noted in Table 8.16-10 may be obtained from any Cal-OSHA district or field office as needed. Notification requirements are listed as 24 hours because the permits may be required at several points in the construction of the plant or during operations; no specific permitting schedule is provided.

TABLE 8.16-10
Health and Safety Permits

Permit or Approval	Schedule	Applicability	Contact
Trenching and excavation permit	Submit completed permit application to any Cal-OSHA district or field office prior to commencing construction	Trenches and excavations of more than 5 feet that personnel are required to enter; or construction of buildings, structures, scaffolding, or falsework more than 3 stories high; or demolition of any building or structure, or dismantling of scaffolding, or falsework more than 3 stories high	Any Cal-OSHA district or field office
Asbestos abatement notification	Submit completed notification to any Cal-OSHA district or field office at least 24 hours prior to initiating activity.	Asbestos abatement work, regardless of amount of asbestos disturbed.	Any Cal-OSHA district or field office
Pressure vessel permit	Submit completed permit application to any Cal-OSHA district or field office prior to commencing construction.	Permit requirement for air tanks, LPG propane storage tanks over 125 gallons, and high pressure boilers over 15 pounds per square inch gauge steam.	Any Cal-OSHA district or field office
Lead work pre-job notification	Submit completed notification to any Cal-OSHA district or field office at least 24 hours prior to initiating activity.	If lead content of material to be disturbed is more than 0.5%, 5,000 parts per million, or 1 milligram per square centimeter	Any Cal-OSHA district or field office
Permit to erect a fixed tower crane	Submit completed permit application to any Cal-OSHA district or field office at least 24 hours prior to initiation of activity	Required to erect, climb, or dismantle fixed tower cranes. Completion of erection of tower crane and commencement of operation or climbing of the tower crane, or dismantling of the tower crane	Any Cal-OSHA district or field office

8.16.6 References

Albers, J. 2006. Humboldt Bay Power Plant, Radiological Protection Engineer. Personal Communication. July 20.

Ziemer, G. 2006. Humboldt Fire District 1, Headquarters. Personal communication. July 11.