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## 7.7 WORKER SAFETY AND HEALTH

This section describes the injury and illness prevention programs that will be established and implemented during construction and operation of the proposed Willow Pass Generating Station (WPGS). The purpose of these programs is to protect human health and capital resources, and minimize the potential for workplace injuries and illnesses at the facility. The development and implementation of these programs will also ensure compliance with applicable laws, ordinances, regulations and standards (LORS), as established by the California Occupational Safety and Health Administration (Cal/OSHA), California Health and Safety Code, and the International Fire Code.

The following sections provide a description of the workplace and the anticipated workplace hazards, define the crucial safety programs and related safety training programs, present the applicable LORS, and identify local safety agency contacts and permit requirements.

### 7.7.1 Workplace Description

The WPGS will consist of a natural-gas-fired combined-cycle power plant and ancillary systems. The new units will be constructed wholly within the site of the existing Pittsburg Power Plant (PPP) (Figure 2.2-1). The generator output from the WPGS will be stepped-up to transmission voltage and interconnected to the existing Pacific Gas and Electric Company (PG&E) switchyard located adjacent to the WPGS site.

The WPGS will be located within the existing PPP site, in the City of Pittsburg, within Contra Costa County, California. The PPP site is surrounded by residential uses to the east; industrial, commercial, and residential uses to the south; marshland to the west; and Suisun Bay to the north.

Construction of the new power generation facility is expected to occur over a 34-month period (from October 2009 through July 2012). When completed, the WPGS will occupy approximately 26 acres in the northeastern portion of the approximately 1,000-acre PPP site, generally within the footprint of the area currently occupied by retired Units 1 through 4, an administration building, one unused #6 fuel oil tank, temporary buildings, and other ancillary facilities. In addition, an unused surface impoundment will be demolished as part of the project and the area will be used for construction laydown and parking and five screening walls will be constructed between existing Tanks 1 through 6 on the PPP site. The WPGS consists of two power blocks, both Siemens Flex Plant 10 units. The WPGS will use air-cooled technology to reduce consumptive water use. Recycled water from Delta Diablo Sanitation District (DDSD) will be used for process water. Two approximately 5-mile-long pipelines will be constructed to bring water from and return wastewater to DDSD Wastewater Treatment Plant (WTP), located approximately 3 miles to the east of the WPGS (Figure 2.2-1). Potable water will be supplied by an existing potable water line on the PPP site that connects with the City of Pittsburg. The WPGS will use natural gas that will be delivered to the site by PG&E via an existing gas metering station located southwest of the PG&E switchyard. A new 12-inch gas line will supply gas to a new metering station on the western boundary of the WPGS site, as shown on Figure 2.3-2.

Engineering, procurement, construction (EPC), and startup of the proposed WPGS are estimated to take approximately 42 months, with construction taking approximately 34 months. Earthwork on the proposed power plant site will consist of excavation and compaction of earth to create the plant grade, and excavation for foundations and underground systems. Units 1 through 4 will be demolished to make room for the proposed WPGS. Tank 7 and associated fuel lines will also be removed. Other demolition includes an unused surface impoundment situated west of Tank 1 (Figure 2.2-2), the existing administrative building and associated parking area, and one hazardous materials storage building and one hazardous waste building. Utilities will be relocated prior to commencing with demolition. Most of the heavy equipment and its components will be transported by rail to the existing spur at the site.

The WPGS will be adjacent to the existing PPP, which includes three operational units (Units 5 through 7). PPP Units 5, 6, and 7 produce electricity for distribution through the grid. The remaining Units 1 through 4 are on the WPGS site and have not operated since 2003. The operational units are gas-fired conventional boilers. In addition, the PPP site includes an existing ammonia storage facility, as well as water intake and discharge facilities. The PPP site has ongoing maintenance and capital improvement projects that may occur prior to the development of the WPGS. In addition, the Trans Bay Cable project is currently being constructed. This project includes the installation of underground electrical cables that traverse the PPP site. Construction of the Trans Bay Cable on the PPP site is currently underway and will be completed in about July 2009.

A number of existing fuel oil storage tanks are also located within the PPP site, in areas outside of the WPGS site. These tanks might be refurbished or reused for purposes unrelated to the WPGS.

These projects are not directly or indirectly connected to the WPGS, and therefore are not part of the project.

### **7.7.2 Occupational Safety and Health**

Construction, operation, and maintenance activities associated with the WPGS may expose workers to physical and chemical hazards. Potential worker exposure to these hazards will be minimized through adherence to appropriate engineering design criteria, implementation of appropriate administrative procedures, use of personal protective equipment (PPE), and compliance with applicable health and safety LORS.

Potential hazards that workers may be exposed to while working on WPGS are presented in Table 7.7-1. Formal health and safety procedures and programs will be established and implemented for construction and operations to control the various hazards and provide for a safe workplace. Tables 7.7-2 and 7.7-3 present programs for construction and operations training.

The site-specific injury and illness prevention programs and safety training programs, which are intended to protect worker health and safety during construction and operation of the project, are described in the following sections.

### **7.7.3 Injury and Illness Prevention Programs**

Prior to beginning construction activities, Mirant Willow Pass and the EPC contractor will develop a site-specific construction injury and illness prevention program. Once the construction of the project is complete, a site-specific injury and illness prevention program for operations and maintenance activities will be implemented. Table 7.7-4 provides an example outline of a construction safety injury and illness prevention program.

#### **7.7.3.1 Construction Injury and Illness Prevention Programs**

Consistent with Cal/OSHA's policy on multi-employer work sites, each employer will be responsible for the health and safety of its own employees. Periodic health and safety audits will be conducted by Mirant Willow Pass to verify contractor and subcontractor compliance with contractual health and safety obligations.

**Construction Safety Program.** The overall written construction safety program will include provisions to ensure compliance with the requirements of Cal/OSHA's Injury and Illness Prevention Program (IIPP) (California Code of Regulations [CCR] Title 8, Section 1509) and will include:

- A written Code of Safe Practices that relates to construction operations;
- Identification of the person or persons responsible for implementing the construction safety program;
- Posting of the Code of Safe Practices at a conspicuous location at the job site office, and providing it to each supervisor, who shall have it readily available;
- A description of the system for identifying workplace hazards, including workplace inspections, job hazard analysis (JHA), and written hazard assessments;
- Periodic meetings with employee representatives, supervisors, and management to discuss safety issues, including compliance assessments, accidents, injuries, and new or modified health and safety procedures;
- A system for ensuring employee and subcontractor compliance;
- Routine “tailboard” safety meetings conducted with employees and supervisors;
- A system for promoting employees’ feedback and suggestions for improving workplace safety;
- Procedures for promptly correcting unsafe conditions; and
- Identification of safety training and experience requirements for specific work activities.

**Construction Personal Protective Equipment Program.** Contractor employees will use PPE during construction as specified in the construction PPE program. Required PPE shall be identified through hazard assessment and general industry standards. The specific PPE ensemble required for each job task will be specified in the job hazard analysis (JHA) for that task. The use of PPE for site activities includes, but is not limited to, the items described in Table 7.7-5. All PPE worn on site will comply with Cal/OSHA and American National Standards Institute (ANSI) requirements. Respiratory protection will be included in the PPE program. Employees will not be required to wear respiratory protection or to work in areas requiring respiratory protection until they have received a medical evaluation, respirator fit-testing, and training on the proper use, limitations, and care of respirators. Table 7.7-6 provides an example outline of a construction safety personal protection equipment program.

**Construction Exposure Monitoring Program.** An exposure monitoring program will be developed to evaluate potential employee exposures to hazardous/toxic materials. Potential exposures will be identified during the task-specific JHAs. Air monitoring may be conducted if necessary to evaluate the potential for employee exposures to the contaminants of concern. Airborne exposures will be controlled through the implementation of engineering controls, administrative controls, or PPE. Air monitoring will also be required in support of other safety programs, including confined space entry, hot work permits, and emergency response. Sound-level monitoring will also be performed as necessary during the construction phase, and initially during new facility operation to evaluate potential employee noise exposures.

**Construction Emergency Action Plan.** An Emergency Action Plan will be developed specifically for the construction phase of the project. The Emergency Action Plan will designate responsibilities and actions to be taken in the event of an emergency at the site. All employees working at the site will be trained on the contents of the program. The Emergency Action Plan will include:

- Emergency roles and responsibilities;
- Emergency notification procedures; and
- Egress routes and assembly points.

**Construction Written Safety Programs.** Additional written safety programs that will be established for the construction phase include, but are not limited to:

- Hazard communication program;
- Confined space program;
- Control of hazardous energy program (Lock Out/Tag Out);
- Hearing conservation program;
- Respiratory protection program;
- Blood-borne pathogens control program;
- Injury and accident reporting and investigation program;
- Ergonomics program;
- Emergency response program, including first aid and medical services;
- Evacuation procedures;
- Smoking policy;
- General housekeeping, material handling, and storage procedures;
- Vehicle and traffic procedures;
- Railroad safety procedures;
- Elevated work procedures;
- Heavy equipment procedures;
- Hot work procedures;
- Crane and hoist procedures;
- Compressed gas and air handling procedures;
- Subcontractor safety programs;
- Equipment inspection programs;
- Supervisor safety and health orientations;
- Excavation and trenching program; and
- Hazard identification team and safety marshal program.

### 7.7.3.2 Operations and Maintenance Injury and Illness Prevention Programs

Upon completion of construction, startup of the project, and implementation of routine operations, the construction injury and illness prevention programs will transition into an operations-oriented program that reflects the hazards and controls necessary during routine operations and maintenance of the WPGS. The WPGS program will reflect any unique hazards specifically associated with maintenance and operation of this facility.

Program outlines for the operations safety programs that will be implemented are provided below. These include an IIPP, Fire Protection and Prevention Plan, Emergency Action Plan, Hazardous Material Management Program, and PPE Program and Operations and Maintenance Written Safety Program.

**Injury and Illness Prevention Plan.** The primary mitigation measures for worker hazards during normal plant operation and maintenance are contained in the IIPP, as required by 8 CCR, Section 3203. The written IIPP designates an individual who is responsible for implementing the program. It also describes safety training and procedures for tracking safety training. JHAs identify safety hazards related to work tasks and establish procedures for avoiding, correcting, reporting, and notifying employees of these hazards.

An IIPP contains the following information and procedures:

- Identity of the person(s) with authority and responsibility for implementing the program;
- A system for ensuring that employees comply with safe and healthy work practices;
- A system for facilitating employer–employee communications regarding safety;
- Procedures for identifying and evaluating workplace hazards, including inspections to identify hazards and unsafe conditions;
- Methods for correcting unhealthy/unsafe conditions in a timely manner;
- Systems for reviewing “Lessons Learned” to promote continuous improvement;
- An employee training program that includes:
  - introducing the program;
  - training of new, transferred, or promoted employees;
  - training on new processes and equipment;
  - supervisor training; and
  - evaluation of contractor training.
- Methods of documenting inspections and training, and for maintaining appropriate records.

Table 7.7-7 provides an example outline of an injury and illness prevention plan.

**Emergency Action Plan.** In addition to incorporating various safety and environmental features and design measures to minimize emergencies and their effects on public and worker safety, WPGS will have a site-specific Emergency Action Plan. The outline for the WPGS Emergency Action Plan is provided in Table 7.7-8. The Emergency Action Plan will address potential emergencies, including chemical releases, fires, bomb threats, pressure vessel ruptures, aqueous ammonia releases, and other catastrophic events. It describes evacuation routes, alarm systems, points of contact, assembly areas, responsibilities, and other actions to be taken in the event of an emergency. The plan includes a layout map, a fire extinguisher list, and a description of arrangements with local emergency response agencies for responding to emergencies.

**Hazardous Materials Management Program.** As described in Section 7.12, several chemicals will be stored and used during operation of the WPGS. The storage and handling of chemicals will follow applicable LORS to minimize risk to workers and the surrounding community. Chemicals will be identified and stored in appropriate chemical storage facilities. Bulk chemicals will be stored in aboveground storage tanks; other chemicals will be stored in their delivery containers. Chemical storage and chemical feed areas will be surrounded by temporary or permanent containment or curbing to contain leaks and spills. The containment areas will be sized appropriately (considering the potential for the local hazard contingencies) as designated by a California Registered Professional Engineer.

Safety showers and emergency eyewash stations or bottles will be provided at all chemical treatment and storage areas, laboratories, and battery rooms in accordance with 8 CCR requirements (within 50 feet, or 10 seconds of travel time). Standard PPE for use during chemical handling activities will be provided. Self-contained breathing apparatus sets and an automated external defibrillator device will be available in the Control Room. First-aid kits will be located in work areas around the plant. Fire blankets and evacuation stretchers will be located in the control building. Standard PPE will be readily available for use during minor chemical spill containment and cleanup activities by plant personnel. Adequate supplies of absorbent material will also be available on site for minor spill cleanup. A hazardous material emergency response team, trained in managing the accidental release of the chemicals used and stored at the plant, will be available through contract. Emergency contact numbers will be available to summon assistance from these contractors and for notification of local agencies. These procedures will be detailed in the Emergency Action Plan.

**Personal Protective Equipment Program.** PPE requirements for work at the WPGS will be identified during the job hazard analyses process. The PPE requirements will be developed and incorporated into the site-specific injury and illness prevention program. The PPE program will include the following:

- Hazard analysis and prescription of PPE;
- Personal protective devices;
- Head protection;
- Eye and face protection;
- Body protection;
- Hand protection;
- Foot protection;
- Safety belts and life lines;
- Protection for electric shock; and
- Respiratory protective equipment.

Table 7.7-9 provides an example outline of an operations PPE program.

**Operations and Maintenance Written Safety Program.** Additional written safety programs will be developed and implemented as necessary to address hazards that are identified with operation and maintenance of the WPGS. These programs will be made components of the overall operations and maintenance injury and illness prevention program for the WPGS facility. These programs include, but are not limited to, the following:

- Blood-borne pathogens control program;
- Hazard communication program;
- Hearing conservation program;
- Hazardous energy control program;
- Confined space entry program;
- Safe work practices program;
- Ergonomics program;
- General facility safety procedures:
  - Compressed gas safety procedures;
  - Heavy equipment safety procedures;
  - Hand tools and equipment guarding procedures;
  - Hoist and rigging safety procedures;
  - Slips, trips, and falls prevention procedures; and
  - Hot work safety procedures;
- Fall protection program;
- Contractor safety program; and
- Risk management plan.

#### 7.7.4 Safety Training Programs

To ensure that employees recognize and understand how to protect themselves from hazards at the WPGS, comprehensive training programs for construction and operations personnel will be implemented. The following sections provide an overview of the training programs that will be required for workers at the WPGS.

#### 7.7.4.1 Construction Safety Training Program

Workers participating in the construction phase of the project will participate in applicable training programs designed to protect workers and others from injuries while working at the site. All construction personnel will be required to attend a basic site safety orientation training course. Additional training will be provided to each individual based specifically on their job responsibilities or craft for those requirements where previous satisfactory training cannot be documented. All training courses will be documented, and attendance records will be maintained at a centralized location. Table 7.7-2 provides an overview of the training programs that will be available to construction personnel.

#### 7.7.4.2 Operation and Maintenance Safety Training Programs

Operations and maintenance employees assigned to the project will be given instructions regarding their responsibility for the safe conduct of their work. These instructions will be given at the time the employee is first hired and as an ongoing training program of hazard recognition and avoidance. Employees will also be instructed in safety procedures pertinent to their employment tasks. Safe working conditions, work practices, and protective equipment requirements will be communicated in the following manner:

- A new, promoted, or transferred employee will receive safety training orientation;
- Safety meetings will be held with employees;
- “Tailboard” safety meetings will be conducted regularly for each crew. General safety topics and specific hazards that may be encountered will be discussed. Comments and suggestions from all employees will be encouraged;
- Hazard communication training, including California Proposition 65 warnings and discharge prohibitions, will be conducted as necessary when new hazardous materials are introduced to the workplace;
- All hazardous materials will be reviewed before they are brought on site;
- Material safety data sheets will be available as required for all appropriate chemicals;
- A bulletin board with required postings and other information will be maintained at the plant site; and
- Warning signs (e.g., hazardous waste storage area, confined space area) that comply with applicable regulations (i.e., bilingual, correct font size) will be posted in hazardous areas.

Safety training will be provided to each new employee as described below:

- A list of safe work rules for the WPGS facility will be explained to each new employee;
- A copy of the applicable Safe Work Practices will be given to each new employee. The provisions will be incorporated into training for the qualifications programs so that employees may fully understand what the protective provisions mean;
- The Hazard Communication Program and requirements for personal protection for the types of hazards that may be encountered at the WPGS facility site will be explained and documented;

- Unusual hazards that are found on site will be explained in detail to each new employee, including any specific requirements for personal protection; and
- Safety requirements for the new employee's specific job assignment will be explained by the foreman upon initial assignment and upon any reassignment.

Table 7.7-3 provides an overview of the training programs that will be available to operations and maintenance personnel.

**Contractors.** An element of the Operations and Maintenance Safety Training Program includes addressing compliance with contractor safety while on site. Contractors will be provided with a list of potential job safety hazards for their assigned activity by a foreman, including safety rules, chemical exposure hazards, physical hazards, and personal protection equipment. Contractors will also be invited to attend "tailboard" safety meetings.

### 7.7.5 Fire Protection

The fire suppression and protection procedures that pertain to construction and operation of the project are presented in Section 7.7.5.1. Section 7.7.5.2 presents a detailed description of fire protection systems that will be installed at the WPGS.

#### 7.7.5.1 Construction Fire Suppression and Prevention

**Onsite Construction Fire Suppression and Prevention.** The WPGS project will rely on both onsite fire protection systems and local fire protection services. The contractor will develop a Fire Protection and Prevention Plan to be followed throughout all phases of construction and will provide the specified fire-fighting equipment. The fire protection and prevention program will address each of the following requirements:

- General requirements;
- Responsibilities;
- Housekeeping;
- Employee alarm/communication system;
- Portable fire extinguishers;
- Fixed fire fighting equipment;
- Fire control;
- Perimeter fire buffer maintenance;
- Flammable and combustible liquid storage;
- Use and handling of flammable and combustible liquids;
- Dispensing and disposal of flammable and combustible liquids;
- Servicing and refueling areas; and
- Training.

Table 7.7-10 provides an example outline of a construction safety fire protection and prevention program.

During construction, portions of the facility fire suppression system will be placed in service as soon as practicable to provide early fire protection. The fire protection systems for the facility are described in Section 2.2.10. Construction fire prevention procedures will be developed in accordance with applicable regulations (8 CCR, Section 1620 et seq.) and will be followed as necessary to prevent construction-related fires. Special emphasis will be given to operations involving open flames, such as welding, metal cutting, and brazing. Hot work permits will be required for specific activities that present a potential for fire, and personnel involved in such operations will receive appropriate training by the contractor. In

addition, a fire watch, using the appropriate class of extinguishers or other equipment, will be maintained during hot work operations. Site personnel will not be expected to fight fires past the incipient stage.

Materials brought on site by contractors must conform to contract requirements, insofar as flame resistance or fireproof characteristics are concerned. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention will be given to compressed gases and storage of fuels, solvents, and paint.

Elements of the onsite fire suppression system during construction will consist of portable and fixed fire-fighting equipment. Portable fire fighting equipment will consist of fire extinguishers and small hose lines in conformance with Cal/OSHA and the National Fire Protection Association (NFPA). Periodic fire prevention inspections will be conducted by the contractor's safety representative.

Fire extinguishers will be inspected monthly and replaced immediately if defective or in need of recharge. All fire-fighting equipment will be located to allow for unobstructed access to the equipment and will be conspicuously marked. A temporary or permanent water supply, of sufficient volume, duration, and pressure to operate the required fire-fighting equipment, will be provided. Combustible materials will be controlled in covered roll-off dumpsters. Designated, approved flammable materials storage areas and flammable materials storage containers will be provided with adequate fire prevention systems.

**Offsite Construction Fire Suppression Support.** The WPGS onsite fire suppression system will be supported by the Contra Costa County Fire Protection District (CCCYPD). The CCCYPD will provide backup assistance and support to the WPGS in the event of a construction-related fire. The response time to the site is estimated to be approximately 2 minutes. The local fire response units will be provided information regarding the type and location of potential fire hazards at the site. This information will be included in emergency response planning.

#### **7.7.5.2 Operations Fire Suppression and Prevention**

Fire protection at the project will include measures relating to safeguarding human life, preventing personnel injury, preserving property, and minimizing down time due to fire or explosion. It will principally involve physical arrangements, such as sprinkler systems, water supplies, and fire extinguishers. Fire protection measures will include measures to prevent the inception of fires. Of concern are adequate exits, fire-safe construction, reduction of ignition sources, and controlling fuel sources.

The WPGS onsite fire suppression system will be supported by the CCCYPD. Station 84 is the station closest to the project site, at 200 East 6th Street in the City of Pittsburg, approximately 1 mile east of the site. The Station has three shifts: A, B, and C, each on a 24-hour shift starting at 8 a.m. Each shift is staffed at all times with one captain, one engineer, and one firefighter; one of these three personnel also has paramedic capabilities. The station has a Quint truck, consisting of a 500-gallon water tank, hose, a 100-foot aerial ladder, and paramedic response equipment (Gonzales, 2008). The response time to the project site is approximately 2 minutes (Walker, 2008). The local fire response units will be provided information regarding the type and location of potential fire hazards at the site. This information will be included in emergency response planning. Routine fire prevention inspections will be conducted by the CCCYPD.

The CCCYPD has fire protection responsibility for the WPGS facility. As such, fire suppression systems will be subject to review and approval by the CCCYPD, which will have final approval responsibility. In addition, facilities will be designed by a California Registered Fire Protection Engineer, and fire protection equipment will be installed and maintained in accordance with applicable NFPA standards and recommendations (National Fire Protection Association, 1994).

The CCCFPD representative will perform the final inspection of the project when construction is complete. In addition, the CCCFPD will conduct periodic fire and life safety inspections thereafter, including reviewing and approving programs for regular equipment inspections and servicing and for the training of employees in fire protection procedures. In addition, the project's insurance carrier will provide periodic inspections by a fire protection specialist. Servicing of the fixed carbon dioxide (CO<sub>2</sub>) and portable fire extinguishers will be conducted by the manufacturer or a licensed contractor.

The overall fire prevention and protection program for the facility will be designed and implemented to protect both personnel and property. The program will specifically address:

- Names and/or job titles of staff responsible for maintaining equipment and controlling the accumulation of flammable or combustible material;
- Procedures in the event of a fire;
- Fire alarm and protection equipment;
- System and equipment maintenance;
- Perimeter fire buffer maintenance;
- Monthly inspections;
- Annual inspections;
- Fire-fighting demonstrations and training; and
- Housekeeping practices.

Table 7.7-11 provides an example outline of an operations fire prevention plan. Table 7.7-12 lists details of the fire protection system design.

**Fire Suppression.** The following fire suppression systems are proposed:

The plant fire protection system will be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The system will include a fire protection water system, carbon dioxide fire suppression systems for the Combustion Turbine Generators (CTGs), and portable fire extinguishers. The primary distribution source of fire protection water will be a new fire loop added to the existing plant fire protection system. The system is designed in accordance with:

- Federal, state, and local fire codes, occupational health and safety regulations, and other jurisdictional requirements;
- California Building Code; and
- NFPA standard practices.

The fire water supply and pumping system provides an adequate quantity of fire-fighting water to yard hydrants, hose stations, and water spray and sprinkler systems. The system is capable of supplying maximum water demand for any automatic sprinkler system, plus water for fire hydrants and hose stations. Hydraulic calculations will be performed to demonstrate that the fire protection loop has sufficient capacity to provide all the required fire-fighting water for the new power plant.

A plant fire water loop, designed and installed in accordance with NFPA 24, is provided to reach all parts of the facility (Figure 2.5-7). The existing fire pumps will discharge to the new dedicated extension of the existing underground firewater loop piping system. Both the fire hydrants and the fixed suppression systems will be supplied from the firewater loop. The fire water system has sectionalizing valves to allow a failure in any part of the system to be isolated, so that the remainder of the system can continue to function properly.

Fixed fire suppression systems will be installed at determined fire risk areas such as the transformers and turbine lube oil equipment. Sprinkler systems or FM-200 waterless fire protection systems will also be

installed in the administration and control building as required by NFPA 24 and local code requirements. Hydrants and hose houses are placed at appropriate spacing around the plant in accordance with NFPA 24 and local fire codes. Handheld fire extinguishers of the appropriate size and rating will be located in accordance with NFPA 10 throughout the facilities. Fire water monitors are placed where they can reach equipment that may need cooling during a fire. Valves requiring periodic testing are accessible.

An existing electric-driven jockey pump on the PPP property ensures that the fire water loop remains pressurized. If the pressure in the fire water loop drops below a lower set point, a fire pump starts automatically. The fire pump runs until manually stopped.

The main fire control panel, located in the station control room, annunciates activation of a fire protection/detection system by location zones. The panel is designed to operate on 120-VAC power through the (uninterruptible power supply) system. The alarm and detection system is designed to comply with NFPA 70 and 72.

Local building fire pull boxes and audible alarms will be provided. Flashing lights are used in addition to audible alarms in high noise areas.

The CO<sub>2</sub> fire-suppression system provided for each CTG will include a CO<sub>2</sub> storage tank, CO<sub>2</sub> piping and nozzles, fire detection sensors, and a control system. The control system will automatically shut down the turbines, turn off ventilation, close ventilation openings, and release CO<sub>2</sub> upon detection of a fire. The CO<sub>2</sub> fire-suppression systems will cover the turbine enclosure and accessory equipment enclosure of each CTG.

Portable CO<sub>2</sub> and dry chemical extinguishers are located throughout the power plant site, including switchgear rooms, with size, rating, and spacing in accordance with NFPA 10. Handcart CO<sub>2</sub> extinguishers are provided for the turbine area as needed for specific hazards.

### **7.7.5.3 Fuel Handling System**

This section describes the quantity of fuel gas required, its source, and its expected quality. Natural gas will be supplied to the WPGS by PG&E, the current supplier of natural gas to the PPP, via a new 12-inch gas line from an existing gas metering station located southwest of the PG&E switchyard. A new metering station will be provided within the WPGS site.

To achieve the required fuel input of 4,500 million British Thermal Units per hour (MMBtu/Hr), higher heating value (HHV), the natural gas pressure will be increased by gas compressors to a pressure of approximately 600 pounds per square inch gauge (psig), filtered, and pressure-regulated before entering the CTG. This will require three electrically powered 3,200 horsepower natural gas compressors. Safety pressure relief valves will be provided to protect the natural gas system components from overpressurization. The expected constituents of the natural gas to be delivered by PG&E are provided in Table 7.7-13.

### **7.7.6 Laws, Ordinances, Regulations, and Standards**

The LORS applicable to worker safety and health are summarized in Table 7.7-14. California operates its own Occupational Safety and Health Administration. As such, Cal/OSHA regulations will take precedence over the federal OSHA regulations at this site. The project will operate in accordance with all LORS applicable to worker health and safety. Construction, operation, and maintenance of the WPGS will be performed in conformance with the LORS as presented in Table 7.7-14. Effective development and implementation of the safety plans and programs described in this section, and implementation of an ongoing, comprehensive safety assessment program will ensure compliance with the established health and safety regulations.

### 7.7.7 Involved Agencies and Agency Contacts

Agency contacts regarding worker health and safety at the WPGS facility are listed in Table 7.7-15.

### 7.7.8 Permits Required and Permit Schedule

Table 7.7-16 provides a list of applicable permits related to the protection of worker health and safety applicable to the project. The activities covered and application requirements to obtain the permit and provided for each type of permit.

All permits noted in Table 7.7-16 may be obtained from the Cal/OSHA district office, which, for work places in the City of Pittsburg, is located in Oakland, California, (510) 622-2891.

A safety permit conference must be scheduled with the local Cal/OSHA office at least two weeks prior to the start of construction. Other permits listed above are supplied on an as-needed basis by any Cal/OSHA district or field office. Notification requirements are listed as “within 24 hours of a permit triggering event”; therefore, a specific permitting schedule is not provided, as the permits may be required at various times during the construction of the plant or during operations.

### 7.7.9 References

California Code of Regulations, no date. Title 8. General Industry Safety Orders, (Chapter 4, Subchapter 7) and Construction Safety Orders (Chapter 4, Subchapter 4).

Cal/OSHA (California Division of Occupational Safety and Health), 2006. Policy and Procedures Manual. Construction Permits. P&PC-41. Issue date: October 1, 1993. Revised October 30, 2006 (Interim Policy and Procedure). URL: <http://www.dir.ca.gov/DOSHPol/P&PC-41.htm>.

Code of Federal Regulations, no date. Title 29 Part 26. Health and Safety for Construction and Title 29 Part 1910 Occupation Safety and Health Standards.

Gonzales, Captain Eddie, (Contra Costa County Fire Protection District), 2008. Personal communication with Lisa Griggs of URS Corporation. May 27, 2008.

NFPA (National Fire Protection Association), 1994. A Compilation of NFPA Codes, Standards, Recommended Practices and Guides. Quincy, Massachusetts.

NSC (National Safety Council), 1992. Accident Prevention Manual. Volume 2, Chapter 6, Fire Protection, pp. 1324-1386.

Walker, Bill, 2008. Personal communication between Bill Walker, Contra Costa Fire Protection District, and Katie Carroz, Carroz Consulting LLC. May 13, 2008; May 22, 2008.



<b>Table 7.7-1 Construction, Operation and Maintenance Hazard Analysis (Page 1 of 3)</b>			
<b>Activity</b>	<b>Exposure Potential</b>	<b>Potential Hazard</b>	<b>Control Strategies</b>
Heavy equipment operation	C, O, M	Employee injury and property damage from collisions with workers and/or facility equipment.	Implement heavy equipment safety program, ensure that equipment is routinely inspected and operators are properly trained.
Work along highway	C	Employee injury due to be struck by moving vehicular traffic.	Develop Traffic Safety Plan for work along highway. Include elements as needed such as signage, flaggers, safe entry and exit points and possible lane closure. Train employees in special hazards and mitigation measures.
Work along rail spur	C	Employee injury due to be struck by moving rail cars.	Develop and implement training curriculum specifically for work along rail spurs. Ensure all employees are aware of specific hazards associated with work along rail spurs.
Trenching and excavation	C, M	Employee injury and property damage from collapse of trenches and excavations or contact with underground utilities.	Implement an excavation and trenching safety program, ensure that operators are properly trained. Require digging permits prior to initiating excavation or trenching.
Vehicle operation	C, O, M	Employee injury from vehicle accident or pedestrian/vehicle accident.	Implement a vehicle safety program that incorporates driver safety training.
Work at elevation	C, O, M	Employee injury due to falls from the same level and elevated work areas.	Implement a fall protection program that requires fall protection systems whenever unprotected work is performed at greater than 6 feet.
General project work	C, O, M	Employee injury resulting from a slip, trip, or fall.	Maintain good housekeeping, adequate lighting, compliant stairways, and railings.
Crane and derrick operation	C, M	Employee injuries and property damage due to falling loads.	Implement hoisting and rigging safety program, inspect equipment routinely and ensure that operators are properly trained.

**Table 7.7-1  
Construction, Operation and Maintenance Hazard Analysis  
(Page 2 of 3)**

<b>Activity</b>	<b>Exposure Potential</b>	<b>Potential Hazard</b>	<b>Control Strategies</b>
Hot work	C, O, M	Employee injuries and property damage due to fire or explosion.	Implement fire protection and prevention program, require Hot Work permits, ensure that welders, pipe fitters, etc., are properly trained.
Working with combustible liquids	C, O, M	Employee injuries and property damage due to fire or explosion.	Implement fire protection and prevention program that includes proper procedures for the proper storage and use of flammable or combustible liquids.
Concrete/forms work	C	Employee injuries due to work at height, slips, trips, and falls.	Wear fall protection when working at height, protect exposed rebar, and maintain good housekeeping.
Electrical work	C, O, M	Employee injuries due to contact with energized parts.	Implement energy control program, including LO/TO of energized sources.
Materials handling	C, O, M	Employee injuries due to improper lifting.	Implement an ergonomics program, and train employees in proper lifting techniques.
Confined space entries	C, M	Employee injuries due to suffocation, exposure to toxic materials, engulfment, etc.	Implement a confined space program, including permit procedures and air monitoring requirements.
Compressed gas storage	C, O, M	Employee injuries and equipment damage due to explosive release of pressure.	Implement a compressed gas safety program, including procedures for proper use and storage.
Power tool use	C, O, M	Employee injuries due to improper use, or use of damaged power tools.	Implement procedures for inspecting power tools before operation and train employees on the proper use and care of power tools.

**Table 7.7-1  
Construction, Operation and Maintenance Hazard Analysis  
(Page 3 of 3)**

<b>Activity</b>	<b>Exposure Potential</b>	<b>Potential Hazard</b>	<b>Control Strategies</b>
Working with or near hazardous or toxic materials	C, O, M	Employee injuries due to exposure to hazardous and/or toxic materials.	Implement hazard communication program and exposure control procedures including engineering controls, administrative controls, and personal protective equipment for activities that may expose employees to hazardous/toxic materials, including specific information on ammonia storage facility.
Working with or near noisy equipment	C, O, M	Employee overexposure to noise.	Implement a hearing conservation program to include identifying high noise activities and sources, sound level monitoring, and personal protective equipment.
Working with or near exposed machinery	C, O, M	Employee injuries from entanglement in rotating or moving equipment.	Develop and implement machine guarding equipment LO/TO procedures.
Work outdoors	C, O, M	Employee injury or illness from biological hazards such as ticks, snakes, spiders and wildlife.	Develop and implement procedures for outdoor work that warn employees of the potential for exposure and provide guidelines for avoidance of contact with biological hazards.
Work in weather extremes	C, O, M	Employee injury or illness due to heat or cold stress.	Develop and implement procedures for work in hot and cold environments that provide for employee monitoring, appropriate clothing and other guidance.
Notes: C = Construction Phase                      O = Facility Operations LO/TO = Lockout/tagout                      M = Facilities Maintenance			

<b>Table 7.7-2 Construction Training Program</b>	
<b>Training Course</b>	<b>Target Employees</b>
Site Safety Orientation	All
Injury and Illness Prevention Plan	All
Emergency Action Plan	All
PPE Program	All
Heavy Equipment Safety Program Forklift Operator Training	Employees working on, near, or with heavy equipment
Trenching and Excavation Safety Program	Employees working on or near trenches or excavations
Fall Protection Program	Employees required to work at elevation ( > 6 feet)
Scaffolding Safety Program	Employees required to erect or use scaffolding
Hoisting and Rigging Safety Program	Employees responsible for performing and/or supervising hoisting and rigging
Crane Safety Program	Employees supervising or performing crane operations
Flammable and Combustible Liquid Storage and Handling	Employees responsible for the handling and storage of flammable or combustible liquids or gases
Hot Work Permits	Employees performing hot work
Hazardous Energy Control (Lockout/Tagout)	Employees performing lockout/tagout
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	All
Housekeeping Policy and Program	All
Hearing Conservation	All
Safe Lifting Program	All
Pollution Prevention Program	All
Hazard Communication	All
Pressure Safety	Employees supervising or working on pressurized systems or equipment
Line Breaking Safety	Employees performing general maintenance or working on pressurized systems or equipment
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Prevention Program	All

<b>Table 7.7-3 Operations and Maintenance Training Program (Page 1 of 2)</b>	
<b>Training Course</b>	<b>Target Employees</b>
Emergency Action Plan	All
HAZWOPER/First Responder	Employees working around hazardous materials or waste
Site Safety Orientation	All
Injury and Illness Prevention Plan	All
Emergency Action Plan	All
PPE Program	All
Trenching and Excavation Safety Program	Employees performing or supervising trenching or excavation work
100% Fall Protection Program	Employees required to use fall protection
Hoisting and Rigging Safety Program	Employees responsible for the oversight or conduct of hoisting and rigging
Forklift Operator Training	Employees working on, near, or with forklifts
Crane Safety Program	Employees supervising or performing crane operations
Flammable and Combustible Liquid Storage and Handling	Employees responsible for the handling and storage of flammable or combustible liquids or gases
Hot Work Permits	Employees performing hot work
Hazardous Energy Control (Lockout/Tagout)	Employees performing lockout/tagout and working in the vicinity of locked out equipment
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	All
Housekeeping Policy and Program	All
Hearing Conservation	All
Safe Lifting Program	All
Pollution Prevention Program	All
Hazard Communication	All
Pressure Safety	Employees supervising or working on pressurized systems or equipment
Line Breaking Safety	Employees performing general maintenance or working on pressurized systems or equipment

**Table 7.7-3  
Operations and Maintenance Training Program  
(Page 2 of 2)**

<b>Training Course</b>	<b>Target Employees</b>
Relief Valve Maintenance and Testing	Employees performing maintenance or testing of relief valves
Respiratory Protection Program	All employees required to wear respiratory protection
Fire Prevention Program	All
Fire Protection Program	All
HAZWOPER/First Responder	Employees responding to emergency spills of hazardous waste or materials

<b>Table 7.7-4 Construction Safety Injury and Illness Prevention Plan Example Outline 8 CCR 1509</b>	
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Safety Department
2.3	Site Safety Officer
2.4	Employees
2.5	Contractors
3.0	Communications
3.1	Tailboard Safety Meetings
3.2	Employee Suggestions
3.3	Anonymous Reporting
4.0	Hazard Assessment
4.1	Job Hazard Analysis
4.2	Hazard Mitigation
4.3	Site Inspections
4.3	Accident Investigation
4.4	Corrective Actions/Lessons Learned
5.0	Program Evaluation/ Compliance
6.0	Training
7.0	Recordkeeping

<b>Table 7.7-5 Protective Equipment Guide (Page 1 of 2)</b>		
<b>Body Area</b>	<b>Hazards</b>	<b>Recommended Protection</b>
<b>Eyes/Face</b>	Low-velocity flying particles	Safety glasses with side shields
	High-velocity chips and sparks	Impact goggles or safety glasses with full face shield
	Corrosive liquid splash during transfer	Splash proof goggles and face shield
	Welding – injurious light rays	Welding hood with appropriate eye filter lenses
<b>Head/Ears</b>	General overhead hazards, overhead rigging, material handling, maintenance, and general construction operations	Nonconductive hard hat
	Noise exposure	Ear plugs or muff
<b>Respiratory System</b>	Low-hazard inert dust	Nuisance dust mask
	Welding fumes	Dust, fume, mist respirator
	Low concentration solvent vapors	Cartridge-type air purifying respirator with organic vapor cartridges
	Acid or base mists	Cartridge-type air purifying respirator with appropriate acid/base cartridges
	High-concentration dusts or toxic vapors, gases	Air line respirator
	Oxygen deficient atmospheres, immediately dangerous to life and health concentrations of vapors, gases	Self-contained breathing apparatus
<b>Hands and Arms</b>	Handling rough or sharp objects	Leather gloves
	Handling hot objects	Insulated gloves
	Using solvents	Chemical-resistant synthetic gloves
<b>Feet and Legs</b>	General wear for light handling	Safety shoes
	Handling heavy objects	Steel-toed safety shoes
	Using brush hooks or scythes	Shin guards
	Working with corrosive liquids	Chemical resistant safety boots
	Underground work	Synthetic safety toe boots

<b>Table 7.7-5 Protective Equipment Guide (Page 2 of 2)</b>		
<b>Body Area</b>	<b>Hazards</b>	<b>Recommended Protection</b>
<b>Trunk and Full Body</b>	Normal work attire	Cotton pants and shirt or fire-retardant clothing as required
	Hot or corrosive liquids	Chemical-resistant apron or full body suit
	Punctures, impact, or cuts	Canvas or leather kickback apron or metal mesh apron
<b>Fall Protection/Rescue</b>	Working from elevated structure or platform without standard railings	Full body safety harness and lanyard
	Vessel (confined space) entry	Full body safety harness and lifeline or wristlets and lifeline
	Suspended scaffolds	Full body safety harness/lanyard

**Table 7.7-6  
Construction Safety Personal Protection  
Equipment Program Example Outline  
8 CCR 1514-1522**

1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Site Safety Officer
2.2	Employees
3.0	Personal Protective Equipment
3.1	Eyes and Face
3.2	Head and Ears
3.3	Respiratory System
3.4	Trunk and Full Body
3.5	Fall Protection
3.6	Hand and Arms
4.0	Training
5.0	Program Review
6.0	Recordkeeping

<b>Table 7.7-7 Operations Injury and Illness Prevention Program Example Outline 8 CCR 3203</b>	
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Safety Department
2.3	Site Safety Officer
2.4	Employees
2.5	Contractors
3.0	Communications
3.1	Safety Committee
3.1	Safety Meetings
3.2	Employee Suggestions
3.3	Anonymous Reporting
4.0	Hazard Assessment
4.1	Job Hazard Analysis
4.2	Hazard Mitigation
4.3	Site Inspections
4.3	Accident Investigation
4.4	Corrective Actions/Lessons Learned
5.0	Program Evaluation/Compliance
6.0	Training
7.0	Recordkeeping

<b>Table 7.7-8 WPGS Operations Emergency Action Outline 8 CCR 3220</b>			
1.0	Introduction	4.7	Emergency Plant Shutdown
	1.1 Purpose	4.8	Site Security
	1.2 Scope	4.9	Emergency Medical Treatment and First Aid
2.0	Responsibilities		
	2.1 Emergency Response Coordinator	4.10	Decontamination
	2.2 Alternate Emergency Evacuation Coordinator	4.11	Documentation and Recordkeeping
	2.3 Safety Coordinator	4.12	News Media
	2.4 Position Description Assignments	4.13	Emergency Notification List
	2.5 Construction/Facility Manager	4.14	Emergency Telephone Numbers List
	2.6 Construction/Facility Supervisor	5.0	Reference Procedures
	2.7 Operators	5.1	Evacuation Plan
	2.8 Health and Safety Manager	5.2	Emergency Equipment Locations
	2.9 Security	5.3	Fire Extinguisher Locations
3.0	Response and Notification Plan (Points of Contact)	5.4	Security
	3.1 Supervisor/Emergency Coordinator	5.5	Accident Reporting and Investigation
	3.2 Health and Safety Manager	5.6	Lockout/Tagout
4.0	Response Procedures	5.7	Hazard Communication
	4.1 Evacuation Routes and Procedures	5.8	Spill Containment and Reporting
	4.2 Accidents Involving Serious Injury and/or Death	5.9	First Aid and Medical Response
	4.3 Fire	5.10	Respiratory Protection
	4.4 Hazardous Waste or Chemical Spills	5.11	Personal Protective Equipment
	4.5 Earthquake	5.12	Sanitation
	4.6 Bomb Threat	5.13	Work Site Inspection

<b>Table 7.7-9 Operations Personal Protective Equipment Program Example Outline 8 CCR 3401-3411</b>	
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Safety Department
2.2	Employees
3.0	Personal Protective Equipment
3.1	Eyes and Face
3.2	Head and Ears
3.3	Respiratory System
3.4	Trunk and Full Body
3.5	Fall Protection
3.6	Hand and Arms
4.0	Equipment Maintenance
5.0	Training
6.0	Program Review
7.0	Recordkeeping

<b>Table 7.7-10 Construction Safety Fire Protection and Prevention Plan Example Outline 8 CCR 1920</b>	
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Site Safety Officer
2.2	Employees
3.0	Plan Implementation
3.1	Housekeeping
3.2	Maintenance
4.0	Types of Hazards
4.1	Fuel Storage and Handling
4.2	Hazardous Materials
4.3	Hot Work
4.4	Flammable and Combustible Materials
4.5	Electrical
5.0	Site Inspections
6.0	Training
7.0	Program Review
8.0	Recordkeeping

<b>Table 7.7-11 Operations Fire Prevention Plan Example Outline 8 CCR 3221</b>	
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Management
2.2	Safety Department
2.2	Employees
3.0	Plan Implementation
3.1	Site Inspections and Housekeeping
3.2	Testing, Inspection and Maintenance of Fire Protection Equipment
4.0	Types of Hazards
4.1	Fuel Storage and Handling
4.2	Hazardous Materials
4.3	Hot Work
4.4	Flammable and Combustible Materials
4.5	Electrical
5.0	Training
6.0	Program Review
7.0	Recordkeeping

<b>Table 7.7-12 Fire Protection Systems Design Conditions</b>	
<b>Location</b>	<b>Type of System</b>
Buildings	Automatic Clean Agent System per NFPA for control room. Wet/dry/pre-action sprinkler system or FM-200 waterless fire protection system for administrative areas and offices.
Turbines	A Carbon Dioxide System per Turbine Manufacturer standards is provided for each CTG.
Throughout Plant	An automatic wet pipe sprinkler system, portable “ABC”-rated fire extinguishers in all areas, and hose reel stations with 100-foot hose.
Outside Areas	Dry barrel-type fire hydrants are designed, installed, and located as per NFPA 24 and as required per local jurisdiction. The location of the hydrants is not more than 300 feet apart in all outside areas as required by Code.

<b>Table 7.7-13 Natural Gas Analysis – Willow Pass Generating Station</b>	
<b>Constituent Name</b>	<b>Volume %</b>
Methane	95.050
Ethane	2.643
Nitrogen	1.091
Carbon Dioxide	0.664
Propane	0.345
n-Butane	0.064
Hexane	0.059
i-Butane	0.052
i-Pentane	0.018
n-Pentane	0.013
<b>Total</b>	<b>100.00</b>
Sulfur (grains per 100 scf)	1.0/0.40 <sup>2</sup>
Higher Heating Value (Btu per ft <sup>3</sup> ) <sup>1</sup>	1,028.08
Source: Gas composition from PG&E. Btu: British thermal units, scf = standard cubic feet <sup>1</sup> 60°F & 30 in. Hga <sup>2</sup> Based on PG&E data: 1.0 is the short term maximum (up to 24 hours or daily) and 0.4 gr/100 scf is the long term (quarterly or annual average). <a href="http://www.pge.com/pipeline/operations/sulfur/sulfur_info.shtml">http://www.pge.com/pipeline/operations/sulfur/sulfur_info.shtml</a>	

<b>Table 7.7-14 Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards (Page 1 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
California Division of Occupational Safety and Health  California Occupational Safety and Health Act 1973	Title 8, CCR	The Act establishes the Cal/OSHA and establishes minimum safety and health standards for work operations occurring in the state.	7.7
	8 CCR, Section 339	Requires listing of hazardous chemicals relating to the Hazardous Substance Information and Training Act.	7.7.3.1, 7.7.3.2, 7.7.4.1, 7.7.4.2
	8 CCR, Section 450 et seq. – 560 et seq.	Establishes safety orders for pressurized vessels including: air tanks, anhydrous ammonia, and general safe work practices.	7.7.3.2
	8 CCR, Section 750 et seq.	Establishes safety orders of work with high pressure steam.	7.7.3.2
	8 CCR, Construction Safety Orders (Sections 1500 et seq. – 1938 et seq.)	Establishes safety orders for construction work.	7.7.3.1
	8 CCR, Sections 1508 et seq. – 1527 et seq.	Requirements for IIPP, PPE, and general site safety.	7.7.3.1
	8 CCR, Sections 1528 et seq. – 1537 et seq.	Requirements for controlling exposures to hazardous air contaminants.	7.7.3.1
	8 CCR, Sections 1539 et seq. – 1547 et seq.	Requirements for excavations and trenching.	7.7.3.1
	8 CCR, Sections 1590 et seq. – 1596 et seq.	Requirements for earth moving and haulage.	7.7.3.1
	8 CCR, Sections 1597 et seq. – 1599 et seq.	Requirements for vehicles, traffic control, flaggers, barricades, and warning signs.	7.7.3.1
	8 CCR, Sections 1604 et seq. – 1605 et seq.	Requirements for construction hoists.	7.7.3.1

<b>Table 7.7-14 Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards (Page 2 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
California Division of Occupational Safety and Health California Occupational Safety and Health Act 1973 (Continued)	8 CCR, Sections 1620 et seq. – 1635 et seq.	Requirements for railings, ramps, stairs, access and egress, openings in floors, roofs and walls, and temporary floors.	7.7.3.1
	8 CCR, Sections 1635 et seq. – 1667 et seq.	Requirements for scaffolding.	7.7.3.1 and 7.7.3.2
	8 CCR, Sections 1669 et seq. – 1678 et seq.	Requirements for safety belts, nets, and ladders.	7.7.3.1 and 7.7.3.2
	8 CCR, Sections 1680 et seq. – 1708 et seq.	Requirements for saws, powder-actuated tools, miscellaneous tools, and equipment.	7.7.3.1 and 7.7.3.2
	8 CCR, Sections 1709 et seq. – 1722 et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations.	7.7.3.1
	8 CCR, Sections 1760 et seq.	Electrical requirements for construction work.	7.7.3.1
	8 CCR, Sections 1920 et seq. – 1938 et seq.	Requirements for construction-related fire protection and prevention.	7.7.5.1
	8 CCR, Electrical Safety Orders (Sections 2299 et seq. – 2974 et seq.)	Establishes safety orders for installation of low and high voltage electrical systems.	7.7.3.1
	8 CCR, General Industry Safety Orders (Sections 3200 et seq. – 6184 et seq.)	Establishes safety orders for general industry work, including operations and maintenance.	7.7.3.2
	8 CCR, Sections 3200 et seq. – 3583 et seq.	Requirements for IIPP, PPE, and general site safety.	7.7.3.2
8 CCR, Sections 3620 et seq. – 3920 et seq.	Requirements for mobile equipment operation.	7.7.3.2	

<b>Table 7.7-14 Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards (Page 3 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
California Division of Occupational Safety and Health  California Occupational Safety and Health Act 1973 (Continued)	8 CCR, Sections 3940 et seq. – 4647 et seq.	Requirements for power transmission equipment, rotating equipment, moving parts points of operation, etc.	7.7.3.2
	8 CCR, Sections 4794 et seq. – 4884 et seq.	Requirements for compressed gases and gas systems for cutting and welding.	7.7.3.2
	8 CCR, Sections 4850 et seq. – 4853 et seq.	Requirements for electric welding.	7.7.3.2
	8 CCR, Sections 4884 et seq. – 5049 et seq.	Requirements for cranes and other hoisting equipment.	7.7.3.2
	8 CCR, Sections 5094 et seq. – 5100 et seq.	Requirements for control of excessive noise exposure and ergonomic hazards.	7.7.3.2
	8 CCR, Sections 5139 et seq. – 5223 et seq.	Requirements for the control of hazardous substances, including Hazard Communication program requirements.	7.7.3.2
	8 CCR, Sections 5615 et seq. – 5629 et seq.	Requirements for the control of hazards from flammable liquids, gases, and vapors.	7.7.3.2
	8 CCR, Sections 6150 et seq. – 6184 et seq.	Requirements for fire protection and prevention.	7.7.5.2
	8 CCR, Part 6	Provides health and safety requirements for working with tanks and boilers.	7.7.3.2
	29 CFR 1926	Contains federal health and safety regulations pertaining to construction activities.	7.7.3.1
	29 CFR 1910	Contains federal health and safety regulations pertaining to general industry.	7.7.3.2

<b>Table 7.7-14 Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards (Page 4 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
Contra Costa Fire Protection District Chief	Section 25500 et seq. (LaFollette Bill)	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed acutely hazardous materials prepare and maintain a Risk Management Plan.	7.12, 7.7.3.1, and 7.7.3.2
	Section 25500 et seq. – 25541 et seq.	Requires the preparation of a Hazardous Material Business Plan that details emergency response plans for a hazardous materials emergency at the facility.	7.12
	IFC	Requires 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.	7.12
	NFPA 10: Portable Fire Extinguishers	Requirements for the selection, placement, inspection, maintenance, and employee training for portable fire extinguishers.	7.74 and 7.75
	NFPA 12: Carbon Dioxide Fire Extinguishing Systems	Requirements for the installation and use of carbon dioxide extinguishing systems.	2.2.11 and 7.7.5
	NFPA 13 and 13A: Sprinkler Systems	Guidelines for selection, installation, maintenance, and testing of fire sprinkler systems.	2.2.11 and 7.7.5
	NFPA 14: Standpipe and Hose Systems	Guidelines for the selection and installation of standpipe and hose fire protection systems.	2.2.11 and 7.7.5
	NFPA 15: Water Spray Fixed Systems	Guidelines for selection and installation of fixed water spray systems.	2.2.11 and 7.7.5
	NFPA 22: Water Tanks and Private Fire Protection	Requirements for water tanks that are used for private fire protection.	2.2.11 and 7.7.5
	NFPA 24: Installation of Private Fire Service Mains and their Appurtenances	Requirements for installation of private fire service mains and appurtenances.	2.2.11 and 7.7.5

<b>Table 7.7-14 Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards (Page 5 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
Contra Costa Fire Protection District Chief (continued)	NFPA 26: Supervision of Valves Controlling Water Supplies	Provides guidance for installation and supervision of valves used to control water supplies.	2.2.11 and 7.7.5
	NFPA 30: Flammable and Combustible Liquids	Requirements for storage, transfer, and use of flammable and combustible liquids.	7.7.3.1 and 7.7.3.2
	NFPA 37: Stationary Combustion Engines and Gas Turbines	Provides fire protection requirements for the installation and use of combustion engines and gas turbines.	2.2.11 and 7.7.5
	NFPA 50A: Gaseous Hydrogen Systems	Provides fire protection requirements for hydrogen systems.	7.7.5
	NFPA 54: National Fuel Gas Code	Provides fire protection requirements for the use of fuel gas.	2.2.11 and 7.7.5
	NFPA 70, 70B and 70E: National Electric Code	Guidance on the safe selection and work practices associated with the design, installation, construction, and maintenance of electrical systems.	7.7.3.1 and 7.7.3.2
	NFPA 71: Installation, Maintenance and use of Central Station Signaling Systems	Provides requirements for the installation, maintenance, and use of central station signaling systems.	2.2.11 and 7.7.5
	NFPA 72A, 72E and 72F: Local Protective Signaling System, Automatic Fire Detection System, Emergency Voice/Alarm Communication System	Provides requirements for the design, installation, use and maintenance of local protective signaling systems, automatic fire detection systems and emergency communication systems.	2.2.11 and 7.7.5
	NFPA 78: Lightning Protection Code	Provides requirements for lightning protection.	7.7.3.1
	NFPA 80: Fire Doors and Windows	Provides requirements for fire doors and windows.	7.7.3.1
NFPA 90A: Installation of Air Conditioning and Ventilation Systems	Provides guidance for the installation of air conditioning and ventilation systems.	7.7.3.1	

<b>Table 7.7-14                      Applicable Worker Safety and Health Laws, Ordinances, Regulations, and Standards                      (Page 6 of 6)</b>			
<b>Administering Agency</b>	<b>LORS</b>	<b>Applicability/Compliance</b>	<b>Subsection</b>
Contra Costa Fire Protection District Chief (continued)	NFPA 101: Life Safety, Fire in Buildings and Structures	Requirements for the design and construction of means of egress from structures.	7.7.3.1
	NFPA 291: Fire Flow Testing and Marking of Hydrants	Requirements for flow testing and marking of fire hydrants.	7.7.3.2
	NFPA 1962: Care, Maintenance and Use of Fire Hoses	Requirements for the care, use and maintenance of fire hoses, connections, and nozzles.	7.7.3.2
Cal/OSHA	ANSI/ASME Boiler and Pressure Vessel Code	Provides specifications and requirements for boilers and pressure vessels.	7.7.3
	ANSI, B31.2, Fuel Gas Piping	Provides specifications and requirements for fuel gas piping.	7.7.3.1
Notes: a Cal/OSHA has primary jurisdiction for worker health and safety in California. These regulations are provided for reference purposes and apply as referenced in Cal/OSHA regulations.  ANSI/ASME = American National Standards Institute/American Society for Mechanical Engineers Cal/OSHA = California Occupational Safety and Health Commission CCR = California Code of Regulations CFR = Code of Federal Regulations IIPP = Injury, illness, prevention program IFC = International Fire Code NFPA = National Fire Protection Association PPE = personal protective equipment			

<b>Table 7.7-15 Involved Agencies and Agency Contacts</b>			
<b>Issue</b>	<b>Agency/Address</b>	<b>Contact/Title</b>	<b>Telephone</b>
Fire protection	Contra Costa County Fire Protection District	Fire Engineering Department	(925) 757-1303 (non-emergency)
Building inspection	Pittsburg Building Department 65 Civic Avenue Pittsburg, CA 94565	Curtis Smith Chief Building Official	(925) 252-6967
Worker Health and Safety	Cal/OSHA (District Office) Oakland 1515 Clay Street Suite 1301 Oakland, CA 94612	Mr. Nick Gleiter District Manager On Call Safety Engineer	(510) 622-2916 (510) 622-2908 (fax)
Pressure vessel permit	Pressure Vessel Unit District Office Division of OSHA 1515 Clay Street Suite 1302 Oakland, CA 94612	Safety Engineer	(510) 622-3066

<b>Table 7.7-16 Permits Required (Page 1 of 2)</b>		
<b>Responsible Agency</b>	<b>Permit/Approval</b>	<b>Schedule</b>
Any Cal/OSHA district or field office	<p><b>Construction Activity Permit</b></p> <p>A construction activity permit is required for:</p> <ul style="list-style-type: none"> <li>• Construction of trenches or excavations that are 5 feet or deeper and into which a person is required to descend</li> <li>• Construction of any building, structure, scaffolding or falsework more than three stories high or an equivalent height (36 feet)</li> <li>• Demolition of any building or structure, or dismantling of scaffolding or falsework more than three stories high or an equivalent height (36 feet)</li> <li>• Erection or dismantling of vertical shoring systems more than three stories high, or an equivalent height (36 feet)</li> </ul> <p>The construction activity permit process is as follows:</p> <ul style="list-style-type: none"> <li>• The permit applicant will schedule a safety permit conference appointment with the nearest Cal/OSHA district office.</li> <li>• The safety permit conference shall be attended by the permit applicant, who must be knowledgeable about and in a position of authority and responsibility with respect to the permitted activity.</li> <li>• The potential safety and health risk of the activity shall be discussed, and the contractor shall identify specific measures to be taken to minimize these risks to employees.</li> <li>• Details of the activity shall be reviewed along with Title 8 Safety Orders applicable to the activity in which the permit applicant will engage.</li> <li>• The permit applicant shall provide enough detail about the construction activity to allow the district office to make a reliable determination that the activity will proceed safely. The applicant shall provide the following for evaluation and review: <ul style="list-style-type: none"> <li>– Applicant’s completed permit application form</li> <li>– Applicant’s completed activity notification form or activity notification form for holders of annual permits</li> <li>– Copy of the permit applicant’s IIP Program</li> <li>– Copy of the permit applicant’s Code of Safe Practices</li> </ul> </li> </ul> <p>Permit forms and checklists may be found online at the Division of Occupational Safety and Health Policy Procedures Manual (2006)</p>	Safety permit conference must be scheduled at least two weeks prior to beginning of construction.

<b>Table 7.7-16 Permits Required (Page 2 of 2)</b>		
<b>Responsible Agency</b>	<b>Permit/Approval</b>	<b>Schedule</b>
Any Cal/OSHA district or field office	<p><b>Trenching and Excavation Permit</b></p> <p>A trenching and excavation permit is required for the following:</p> <ul style="list-style-type: none"> <li>• Trenches and excavations more than 5 feet into which personnel are required to enter or that are adjacent to structures</li> <li>• Construction of buildings, structures, scaffolding or falsework more than three stories high</li> <li>• Demolition of any building, structure, or the dismantling of scaffolding or falsework more than three stories high</li> </ul>	Submit completed permit application to any Cal/OSHA district or field office prior to commencing construction; submit at least 24 hours prior to “trigger event.”
Any Cal/OSHA Administration district or field office	<p><b>Permit for Crane</b></p> <p>Permit for the erection of a fixed tower crane is required for the following:</p> <ul style="list-style-type: none"> <li>• Erection,</li> <li>• Climbing, and</li> <li>• Dismantling of fixed tower cranes</li> </ul> <p>Notifications to the Cal/OSHA must be made at least 24 hours prior to the initiation of the following activities:</p> <ul style="list-style-type: none"> <li>• Completion of erection and commencement of operation</li> <li>• Climbing of the tower crane</li> <li>• Dismantling of the tower crane</li> </ul>	Submit completed permit application to any Cal/OSHA district or field office; submit at least 24 hours prior to “trigger event.”
Pressure Vessel Unit District Office, Division of OSHA	<b>Pressure Vessel Permit</b>	4 to 6 weeks
<p>Note: Cal/OSHA = California Occupational Safety and Health Administration</p>		