

4.12 Fire Protection and Emergency Services

This section addresses the fire protection and emergency response resources related to the proposed Project. These resources include the existing services and capabilities of nearby fire departments and the systems and design of the proposed facilities and their associated pipelines. The emergencies that would require summoning these available resources include fire, oil spill, hazardous substance release, and other events that could lead to these emergency situations, such as earthquake, traffic accident, and pipeline rupture. This section also presents criteria used to determine significant impacts and the impacts of alternatives and cumulative projects.

4.12.1 Environmental Setting

The environmental setting addresses the capabilities currently in place, such as equipment and resources of agencies, such as the County of Los Angeles and the City of Whittier.

4.12.1.1 Response Capabilities

Response capabilities are associated with agencies with jurisdiction over the Project Area or that have mutual aid agreements with that jurisdiction.

Agency Capabilities and Responsibilities

The Project Site and the City of Whittier are within the County of Los Angeles Fire Department (LACoFD) jurisdiction. The LACoFD provides both prevention services (e.g., inspections, permits, and drills) and emergency response. In terms of inspections, the County currently inspects wells and facilities at Honolulu Terrace within the City.

The proposed Project is within the LACoFD's Central Department Region and is within the Battalion 8 area, which includes seven fire stations. Within 4.2 miles of the Project Site, six fire stations could provide services. Table 4.12-1 lists these stations, which are associated with Battalions 8 and 12. Station #28 is the Battalion 8 headquarters and is 2 miles from the proposed Project Site. Fire Stations #59 and #28 are the closest stations to the site, approximately 2.0 miles from the site south along Colima Avenue and Mar Vista Street, respectively. The closest county hazardous materials team is at Fire Station #105 (Battalion 7) in Compton, approximately 20 miles southwest. Table 4.12-1 summarizes the resources and response times for the closest LACoFD fire stations. Figure 4.12-1 shows the locations of these stations.

The LACoFD has mutual aid agreements with other jurisdictions and practices unified command in response to the emergencies at the Project Site. For a hazardous materials incident at the site, such as a crude oil fire or propane release, the County would provide the initial response from Station #28 and #59 and then rely on the extensive resources of the hazardous materials unit for the remaining response activities. The LACoFD Response to Alarms Manual directs the response level to an oil well fire or a pipeline fire as at least three to five engines, a fire truck, a paramedic, the hazmat team, a foam team and an urban search and rescue unit. Station #28, the Battalion Headquarters, also is a responder to Honolulu Terrace and Sycamore Canyon Oil

Facilities. They indicate that minimal response requirements have been associated with these facilities since the 2005 Honolulu Terrace fire.

Table 4.12-1 Fire Stations Available to Respond to an Emergency at the Project Site

Fire Station/ Facility	Address	Distance to Site (approximate response time)	Equipment and Staff
Fire Station #15	11464 Santa Gertrudes Avenue Whittier, CA	3.4 miles (8 minutes)	Battalion 21
Fire Station #17	12006 Hadley Street Whittier, CA	3.1 miles (7 minutes)	Battalion 8
Fire Station #28	7733 Greenleaf Avenue Whittier, CA	2.0 miles (5-6 minutes)	Battalion 8 headquarters
Fire Station #59	10021 Scott Avenue Whittier, CA	2.0 miles (5 minutes)	Battalion 8
Fire Station #91	2691 S Turnbull Canyon Road Hacienda Heights	4.2 miles (10 minutes)	Battalion 12
Fire Station #96	10630 S Mills Avenue Whittier, CA	3.2 miles (11 minutes)	Battalion 8
Station #105	18915 S Santa Fe Avenue Compton, CA	20 miles (27-45 minutes)	Engine 105 - hazardous materials team Battalion 7

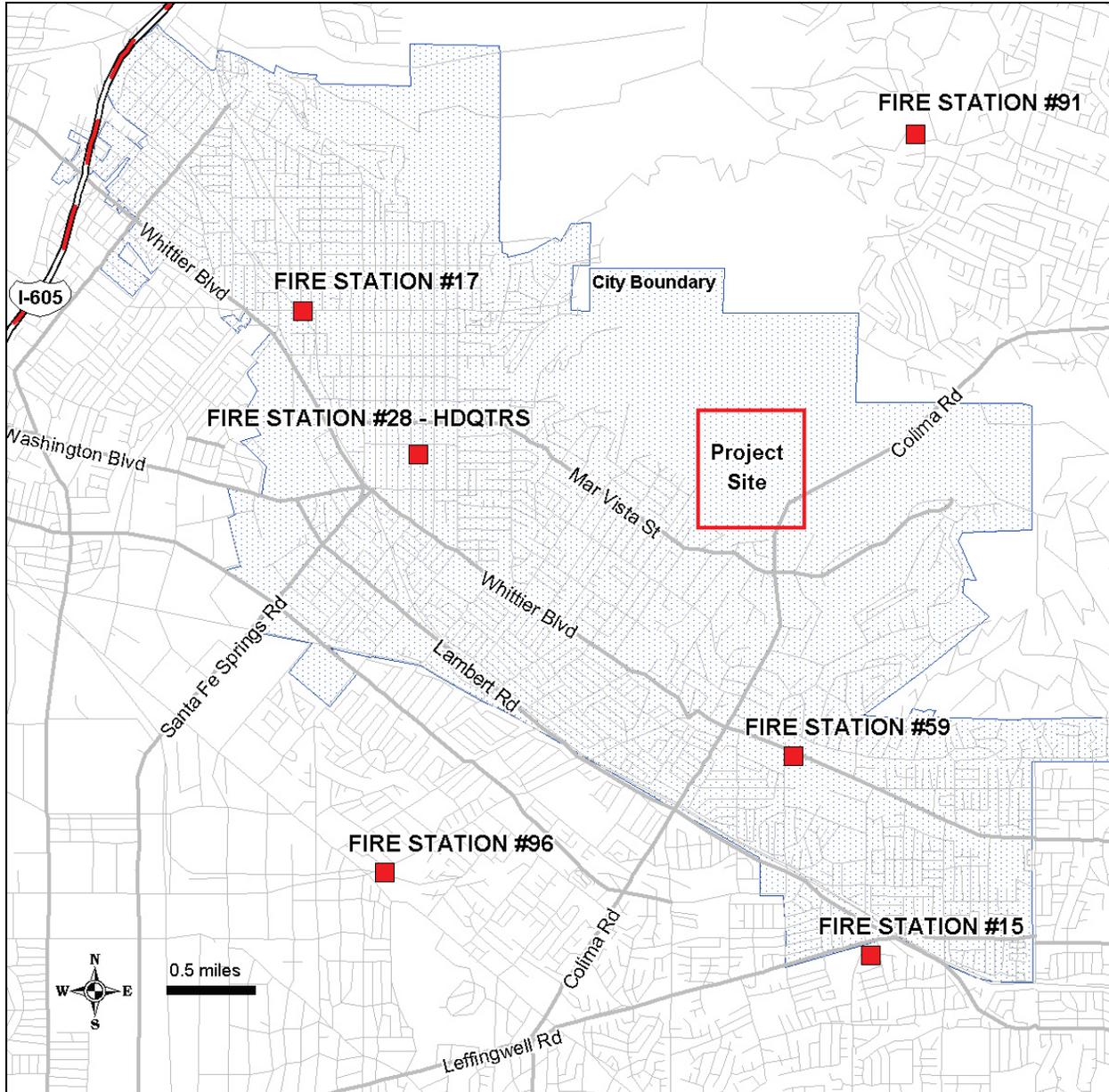
In addition, the Ranger who is stationed in the Ranger Residence near the Catalina Gate entrance to the Preserve (see Figure 2-6), is a trained wildland firefighter and could serve to alert the County Fire Department and possibly take some preliminary steps in the event of a wildland fire.

In 1991, the LACoFD merged with the Department of Health Services' Hazardous Materials Control Program to form the Health Hazardous Materials Division (HHMD). In 1997, the HHMD became a Certified Unified Program Agency to administer the following programs within Los Angeles County: the Hazardous Waste Generator Program, the Hazardous Materials Release Response Plans and Inventory Program, the California Accidental Release Prevention Program (Cal-ARP), the Aboveground Storage Tank Program, and the Underground Storage Tank Program.

The HHMD has an Inspection Section, an Emergency Operations Section, a Special Operations Section, and an Administration and Planning Section. The Inspection Section permits and inspects hazardous material handling and hazardous-waste generating businesses to ensure compliance with federal, state, and local laws and regulations. It also oversees the proper handling, treatment, transportation, and disposal of hazardous wastes generated by many industries. These inspections ensure compliance with applicable laws and regulations and assist businesses with pollution prevention and waste reduction. The HHMD personnel also investigate and resolve complaints alleging mismanagement of hazardous material and hazardous waste.

The Emergency Operations Section provides emergency response services to hazardous materials incidents throughout Los Angeles County.

Figure 4.12-1 Los Angeles County Fire Stations



The Special Operations Section has a Cal-ARP Unit, an Investigations Unit, and a Site Mitigation Unit. The Cal-ARP Unit administers and enforces the Cal-ARP Program at businesses that handle Regulated Substances (i.e., flammable and toxic hazardous materials) in quantities above threshold levels. The Investigations Unit investigates criminal complaints

alleging felony violations of federal and state hazardous materials and waste laws. The Site Mitigation Unit reviews and approves assessment and mitigation work plans for sites contaminated with hazardous substances.

The LACoFD also has a Fire Prevention Division. The Petroleum-Chemical Unit of this Division ensures emergency preparedness with plan checks for buildings, processes, and fire extinguishing systems to meet current codes and ordinances of the Fire Code, Building Code, and County Fire Department Regulations.

The LACoFD Forestry Division is responsible for reviewing environmental documents related to development and protection of oak tree resources, developing vegetation management plans and proposals, coordinating wildland fire planning, enforcing the LACoFD's brush clearance program, and reviewing fuel modification plans.

For information on water supply, see Sections 4.8, Hydrology and Water Resources, and 4.13, Public Services and Utilities.

4.12.1.2 Existing Wildfire Risk

State regulations direct the California Department of Forestry and Fire Protection (CAL FIRE) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (PRC 4201-4204 and Govt. Code 51175-89). These zones, Fire Hazard Severity Zones (FHSZ), define the application of various mitigation strategies to reduce risk associated with wildland fires. Effective in 2008, the California Building Commission adopted California Building Code Chapter 7A requiring new buildings in very high hazard zones to use ignition-resistant construction methods and materials. These new codes include provisions to improve the ignition resistance of buildings, especially from firebrands. Building officials use the very-high-fire-hazard severity zones when evaluating new building permits. The zones are also used to identify property owners who must comply with natural hazards disclosure requirements when they sell the property and create 100-foot defensible space clearance with 30-foot clearance.

The Project Site is in an area designated as a very high fire severity zone for wildland fire (CAL FIRE 2010). The area is also designated as a Local Responsibility Area. Requirements for projects are specified in Title 14 and in PRC 4291:

As stated in the Los Angeles County Pre-Fire Management Plan (LACoFD 2004), the County of Los Angeles Fire Department and the City of Whittier have determined the need of a Vegetation Management Plan to provide a long-term mitigation for the hazardous wildfire problem affecting the City of Whittier and the community of Hacienda Heights associated with the wilderness hills property.

The wildfire history of the Puente Hills, compiled by the Habitat Authority, indicates that 85 fires have occurred since 1928, ranging in size from a few acres to more than 3000 acres burnt in the 1970 Fullerton Fire. The data indicate that a wildland fire has not burned in some areas of the Project Site since before the 1950s. Fire history compiled by the Preserve shows that the 1949 Savage Canyon fire encompassed a portion of the site and burned approximately 1700 acres. The 1979 Catalina Fire encompassed approximately 900 acres immediately east of the Project Site. The 1970 Colima Fire, just east of Colima Road, encompassed approximately 300

acres. The next closest fire was the 1967 Turnbull Fire, which encompassed nearly 1700 acres north of the landfill.

The City of Whittier Municipal Code also addresses very high fire hazard severity zones. Section 15.12.050 indicates that where city council has established very high fire hazard severity zones, the following construction and property maintenance standards shall be in effect within such zone;

- **Roof Covering.** For all new construction, or when an existing structure has 50 percent or more of its roof covering replaced within a 1-year period, a Class A or equivalent roof covering assembly shall be installed.
- **Spark Arrester.** At the outlet of every chimney or stovepipe attached to any fireplace, stove, or other device that burns solid or liquid fuel, a screen shall be provided and maintained in accordance with the provisions of the Uniform Building Code.
- **Clearance of Brush and Other Flammable Vegetation.** Properties shall be maintained clear of brush and other flammable vegetation in accordance with the requirements of Section 51182, et seq., of the Government Code of the state, and the fire code. Abatement shall be in accordance with the provisions of Chapter 8.08.

4.12.2 Regulatory Setting

The regulatory section first discusses codes and standards and then federal and state legislative requirements.

4.12.2.1 Codes and Standards

Several codes and standards apply to fire protection and emergency response for facilities such as the proposed Project. Table 4.12-2 lists many applicable rules and regulations from the American Petroleum Institute (API), Center for Chemical Process Safety (CCPS) Guidelines, Industrial Risk Insurers (IRI), LACoFD Criteria and Guidelines, the Uniform Fire Code (UFC), and the National Fire Protection Association (NFPA).

American Petroleum Institute

API develops petroleum and petrochemical equipment and operating standards and represents the oil and gas industry.

API 2610, Design, Construction, Operation, Maintenance, and Inspection of Terminal and Tank Facilities, addresses issues related to terminals and tank facilities. It addresses site selection, tank spacing requirements, waste management, operations, fire prevention, piping systems, and other issues. API 2610 generally refers to NFPA 30 and NFPA 11 for fire protection issues, such as spacing and foam systems. Fire water supplies “should be based on consideration of the specific risks involved.” Fire water supply can be from “any source that is capable of providing the required flow-rate and for sufficient duration.” API 2610 also indicates that each facility should develop a written emergency plan for the event of a fire in the facility.

Table 4.12-2 Applicable Codes, Standards, and Guidelines

Code/Standard	Description
API 500	Classification of Hazardous Areas in Petroleum Pipeline Facilities
API 653	Design and inspection of atmospheric tanks
API 2004	Inspection for Fire Protection
API 2510	Design and Construction of LPG installations and 2510A Fire considerations
API 2610	Design, Construction, Operation, Inspection and Maintenance of Tank and Terminal Facilities
CCPS	Guidelines for Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities
IRI IM.2.5.2	Plant Layout and Spacing for Oil and Chemical Plants
LACoFD Fire Prevention Regulations	20 - Safety of Refineries, Bulk Plants and Chemical Plants and 24 - Above Ground Storage & Dispensing of Flammable & Combustible Liquids
NFPA Standard 11	Low Expansion Foam and Combined Agent Systems
NFPA Standard 15	Water Spray Fixed Systems
NFPA Standard 22	Water Tanks for Private Fire Protection
NFPA Standard 24	Installation of Private Fire Service Mains and Their Appurtenances
NFPA Standard 25	Inspection, Testing and Maintenance of Water-Based Fire Protection Systems
NFPA Standard 30	Flammable and Combustible Liquids Code
UFC Article 74	Compressed gasses
UFC Article 79	Flammable and Combustible Liquids
UFC Article 80	Hazardous Materials
UFC Article 82	Liquefied Petroleum gasses
UFC Appendix II-A	Suppression and Control of Hazardous Fire Areas
UFC Appendix III	Fire flow requirements, fire hydrant locations, Access Guidelines

Notes: LPG = liquefied petroleum gas

API 2610 addresses:

- Hazard identification and communication (section 4.2);
- Written operating procedures to address routine and non-routine operations, such as emergency shutdown and startup (section 4.3);
- Safe work practices, including hotwork, lockout/tagout, and confined space entry (section 4.4);
- Emergency response plans (section 4.5, 5.6);
- Management of change, training programs, pre-startup review, incident investigation, and contractor safety (sections 4.6-4.10);
- Control of flammable vapors (e.g., storage tank type, inert gas) (section 5.2);
- Overfill protection and high level alarms (section 5.2, 6.1);
- Inspection and maintenance programs (see API 653);

- Portable fire extinguishers (section 5.3);
- Tank leak detection and vapor emission control (section 6.1);
- Tank appurtenances (e.g., vents, gauges, manholes, ladders, grounding);
- Water draw-off systems to remove water in the bottom of the tank;
- Dikes sized to “contain the greatest amount of liquid that may be released from the largest tank within the diked area assuming a full tank and providing sufficient allowance for precipitation;”
- Location of firefighting valves outside diked areas;
- Anchoring of piping and elimination of dead-legs;
- Loading facilities spill containment, including sloped pavement and catch basins, lighting, fire protection, and overpressure protection (section 9);
- Loading valves either self-closing (top loading) or automatic shut-off to prevent overfill;
- Loading area water/foam spray systems, automatically or manually activated with thermal/flame detectors, and combustible vapor detection;
- Loading vapor control systems;
- Loading emergency shutdown systems;
- Communication systems; and
- Corrosion control.

API 2610 states that “unless known to be otherwise, crude oil and residual fuels in storage should be considered to be flammable liquids for firefighting purposes” (section 5.8.2).

API 653, Tank Inspection, Repair, Alteration, and Reconstruction, addresses the maintenance of atmospheric storage tanks:

- Tank suitability for service;
- Brittle fracture considerations;
- Inspections;
- Materials;
- Design considerations;
- Tank repair and alteration;
- Dismantling and reconstruction;
- Welding;
- Examination and testing;
- Marking and recordkeeping;

- External tank inspections by an authorized inspector every 5 years;
- Ultrasonic inspections of shell thickness every 5 years (when corrosion rate unknown);
- Internal bottom inspection every 10 years, if corrosion rates unknown; and
- Detailed checklists for in-service and out-of-service inspections (Appendix C).

API 2510 addresses storage and use of liquefied petroleum gases (LPG), such as propane and butane. API 2510 requires:

- Looped fire water systems around the storage and handling of LPG;
- Fire water supplies capable of cooling the largest vessel being protected (0.25 gallons per minute per square foot [gpm/ft^2] of vessel) plus adjacent vessels plus reserve capacity of three 250 gallons per minute (gpm) cooling streams;
- Fire water for at least 4 hours of supply;
- Location of hydrants so that each storage vessel can be reached from at least two directions by at least three cooling streams, none of which uses more than 300 feet of hose;
- Water deluge systems manually operated from outside the spill containment area and at least 50 feet from the storage vessel;
- Automatic systems considered for unattended operations;
- Fireproofing of vessel structural supports;
- Vessel fireproofing if portable equipment is the only means of applying firewater;
- Emergency shutoff systems, including manual shutoff from a location accessible during an emergency or automatic shutoff through fire activation;
- Shutoff valves shall close automatically with fire or be remotely actuated; and
- Fire and hydrocarbon detection.

Center for Chemical Process Safety

The American Institution of Chemical Engineers formed the CCPS in 1985 in response to the 1984 industrial accident in Bhopal, India. Since then, CCPS has published more than 100 process safety guidebooks. “Guidelines for Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities” (CCPS 2003a) and “Facility Siting and Layout” (CCPS 2003b) address several issues related to the proposed Project processes, including fire protection strategies, fire prevention, hazards analysis and risk assessment, equipment spacing, and design guidelines. Specific guidelines include:

- Firefighting access should be provided from at least two directions and should not require crossing an adjacent unit. Access ways should be provided every 200 feet, should be at least 20 feet wide, and should not pass under pipeways.
- A water supply of 4 hours should be provided with a minimum demand of 3,000 gpm.

- The use of flammable gas detection and fire detection (i.e., flame, smoke, and heat) is recommended.
- LPG vessels within a fire-scenario envelope require fireproofing unless they are protected by fixed water sprays systems.
- Detection and alarm systems are recommended, including alarms in the control room or another 24-hour attended location, visual and audible alarms such as strobes or beacons, and horns and detection systems utilizing heat, smoke, gas, and flame detection with appropriate spacing (NFPA 72).
- Foam systems should be checked at least annually, including foam performance evaluations and fire extinguishers should be checked monthly.
- Isolation valves should be used on inventories more than 2,000 gallons and they should be easily accessible under adverse conditions or remotely operable.

Industrial Risk Insurers

IRI provides guidance for facilities to address property loss prevention. IRI Guideline 17 indicates that fire water supplies should be capable of supplying at least 500 gpm for 4 hours for pumping stations (IRI 17.3.3), and 3,000 gpm for 4 hours to all areas of an oil storage terminal (IRI 17.3.4).

IRI IM2.5.2 also provides guidelines for the overall oil and chemical plant's layout. The most important guidelines recommend:

- At least two entrances to the plant;
- Subdividing the site into general areas (blocks) with a maximum size of 300 by 600 feet;
- Access roadways between the blocks to allow access to each block from at least two directions; and
- Road widths and clearances sized to handle large moving equipment and emergency vehicles.

National Fire Protection Association

The NFPA, established in 1896, publishes numerous codes and standards that cover issues ranging from foam systems to dry cleaning facilities. Several NFPA codes and standards are applicable to the proposed Project.

NFPA Standard 11 addresses foam application to protect outdoor atmospheric storage tanks containing flammable and combustible liquids. Fire-fighting foam is an aggregate of air-filled bubbles formed from aqueous solutions and is lower in density than flammable liquids. It is used principally to form a cohesive floating blanket on flammable and combustible liquids and prevents or extinguishes fire by excluding air and cooling the fuel. It also prevents re-ignition by suppressing formation of flammable vapors. Foam is prepared by utilizing a water supply along with a foam concentrate.

Foam for tank fires can be applied through fixed foam discharge outlets permanently fixed to the tank top, by portable hose streams using foam nozzles, or by large-capacity monitor nozzles close to the tank. Foam can be applied to a liquid spill into a dike to suffocate a fire or prevent ignition of the flammable material spill, utilizing either fixed systems, portable systems, or monitors. Foam systems should be inspected annually, including foam performance tests.

For fires on the roof of the tank, NFPA 11 requires a foam supply with a minimum discharge rate of 0.16 gpm/ft² (for hand-held and foam monitors) and a minimum discharge time of 65 minutes for crude petroleum (section 5). The minimum foam application rate and discharge time for discharge outlets fixed to the tank are 0.10 gpm/ft² and 30 minutes, respectively. For diked areas, foam rates shall be 0.16 gpm/ft² for 30 minutes.

NFPA 11 also requires that fixed foam systems have automatic fire detection (thermal and hydrocarbon detection) and alarms.

NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection, addresses water spray systems and issues such as installation requirements; design requirements, including hydraulic calculations; water supplies; and maintenance.

NFPA 22 addresses the installation of private firewater tanks to supply firewater to a facility.

NFPA 24 and 25 address the installation of private fire service equipment, including service mains and fire hydrants, as well as inspection, testing, and maintenance.

NFPA 30 addresses issues related to flammable and combustible liquids. NFPA 30 addresses fire prevention and risk control, electrical systems, storage in containers, processing facility issues, aboveground storage tanks requirements, and piping systems. NFPA 30 also addresses separation distances from vessels and tanks to property lines and to buildings and structures.

Uniform Fire Code

The UFC addresses issues ranging from egress and emergency escapes to fumigation, hot work, and cryogenic fluids.

Article 9 addresses site access and water supply for buildings, including access road minimum width requirements of 20 feet and all-weather driving capabilities.

Article 79 addresses flammable and combustible liquids issues, including:

- Overfill prevention;
- Automatic shut-off;
- Tank venting;
- Required use of foam systems on crude tanks with on-site storage of foam;
- Diked areas equal to or greater than the largest tank; and
- Well drilling and operations separation distance from storage tanks (25 feet), sources of ignition (25 feet), streets and railways (75 feet), buildings (100 feet), places of assembly and schools (300 feet).

Wildfire in the California Building and Fire Codes

The California Building Code (Chapter 7A section 701A) addresses materials and construction methods for exterior wildfire exposure, including roofing, attic ventilation, exterior walls, decking, fire sprinkler systems and ancillary buildings. The California Fire Code (Chapter 47) addresses requirements for wildland-urban interface fire areas, including materials and construction methods. The Los Angeles County Title 32 Fire Code specifies requirements for brush clearance and vegetative growth (section 317), including development of a fuel modification plan approved by the Department of Forestry.

4.12.2.2 Federal and State Regulations

California Code Title 8, Division 1 (Department of Industrial Relations) Chapter 4 (Division of Industrial Safety), Subchapter 14 (Petroleum Safety Orders--Drilling and Production), addresses several issues related to confined space and testing of vapor. Article 6, section 6529 addresses issues related to fire and explosions:

- Firefighting equipment should be inspected, tested, and maintained in serviceable condition. A record should be kept recording when fire extinguishers were last inspected, tested, and recharged.
- A plan shall be established and implemented to ensure the safe and orderly evacuation of employees.

Section 4.3, Risk of Upset, Hazards, and Hazardous Materials, and Section 4.8, Hydrology and Water Resources, further discuss regulations related to oil spills and pipelines.

Los Angeles County Fire Prevention Regulations

The LACoFD maintains fire prevention regulations that address issues from fireworks to aboveground storage of flammable materials.

Regulation 8 addresses fire hydrant design, specifying 300-foot spacing, a minimum fire hydrant flow of 1,000 gpm, and a maximum flow of 5,000 gpm for 2 to 5 hours.

Regulation 20 addresses refineries and chemical plants that store, handle, process, or distribute hazardous materials that are regulated by the County of Los Angeles Fire Code. Regulation 20 addresses inspections, labeling of piping and tanks, permits, emergency plans, and safety training programs.

The LACoFD submitted a letter in response to the Notice of Preparation of this Environmental Impact Report that indicated requirements, which are reflected in existing codes and standards, including:

- Multiple ingress and egress;
- Brush clearance of 10 feet around all roadways;
- Fire flows up to 5,000 gpm at 20 pounds per square inch, gauge, for a 5-hour duration;
- A maximum 32-foot turning radius of all roadways and a maximum 15 percent grade (LACoFD 2010).

California and LACoFD Wildfire Regulations

Regulations related to wildfires are codified in different jurisdictions, depending on whether the area is a State Responsibility Area or a Local Responsibility Area. The California Department of Forestry and Fire Prevention (CAL FIRE) developed maps that make these designations pursuant to the requirements of Public Resources Code (PRC) 4201-4204 and Government Code 51175-89. State Responsibility Area requirements are related to:

- Emergency Access, including road width (18 feet), surface (20 tons load), grade (less than 16 percent), radius (50 feet inside radius minimum), and turnarounds (40-foot radius);
- Signing and building numbering, including size of letters (3 inches) and visibility (from 100 feet);
- Emergency water standards, including hydrants and signage; and
- Fuel modification zones, including defensible space with a firebreak of 30 feet around all structures and a reduced fuel zone from 30 to 100 feet (CCR Title 14, PRC 4290, and 4291).

The County of Los Angeles Forestry Division requires the development of a fuel modification plan for proposed developments in very high fire hazard severity zones. The Division publishes guidelines for the development of fuel modification plans, which describe various types of zones and detail a distance chart that defines fuel modification zones based on structural construction, fuels, slopes, and fire history (LACoFD 1998). However, in general, the fuel modification requirements are directed towards buildings and allowing for development of defensible space. There are no requirements directly related to industrial equipment outside of buildings.

4.12.2.3 Equipment Spacing

Safe equipment spacing requirements for petrochemical plants are given in IRI Guidelines IM2.5.2, CCPS, NFPA Fire Protection Handbook, NFPA 30, and API 2510. Table 4.12-3 summarizes the requirements applicable to the proposed Project.

Table 4.12-3 Applicable IRI, CCPS, NFPA, and API Equipment Spacing Requirements**A. Inter-Unit Spacing Requirements (feet) - IRI**

	Flares	Loading Racks	Service Buildings	Control Rooms	Fire Water Pumps	Process Units High Hazard	Pressure Storage Tanks	Atmospheric Storage Tanks
Flares	—	50	—	—	—	200	*	*
Loading Racks	300	50	—	—	—	200	*	*
Service Buildings	300	200	—	—	—	200	*	*
Control Rooms	300	200	—	—	—	200	*	*
Fire Water Pumps	300	200	50	50	—	200	*	*
Process Units High Hazard	300	200	400	300	300	200	*	*
Pressure Storage Tanks	400	350	350	350	350	350	*	*
Atmospheric Storage Tanks	300	250	250	250	350	350	*	*

Notes: — = no spacing requirement; * = see table C (Storage Tanks Spacing Requirements)

Source: IRI IM2.5.2

B. Intra-Unit Spacing Requirements (feet) - IRI

	Compressors	Pipe racks	Fired Heaters	Heat Exchanges	High Hazard Pumps	Emergency controls	Analyzer rooms
Compressors	30	—	25	5	5	—	—
Pipe racks	50	—	25	5	5	—	—
Fired Heaters	50	50	25	5	5	—	—
Heat Exchanges	30	10	50	5	5	—	—
High Hazard Pumps	30	15	50	15	5	—	—
Emergency controls	50	50	50	50	50	—	—
Analyzer rooms	50	50	50	50	50	—	—

Notes: — = no spacing requirement

Source: IRI IM2.5.2

C. Plant Equipment Spacing Requirements (feet) – CCPS

	Property	Storage tanks	Heat Exchangers	Fired Heaters	Gas Compressors	Pumps	Loading Racks	LPG Loading racks
Property	—							
Storage Tanks	200	15						
Heat Exchangers	200	15	15					
Fired Heaters	200	50	50	—				
Gas Compressors	200	15	15	50	—			
Pumps	200	15	15	50	15	—		
Loading Racks	100	200	200	200	200	200	—	LPG Loading racks
LPG Loading racks	350	250	250	250	250	250	150	—
Office, lab, maintenance areas	-	*	200	200	200	200	-	-
Control room	-	*	200	200	200	200	-	-

Notes: see following table

Source: CCPS Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities, Appendix A

D. Tank Spacing to Other Areas (feet) – CCPS

Location	Tank Type				
	Atmospheric Tank less than 10,000 gallons	Atmospheric Tank more than 10,000 gallons	Atmospheric Tank with boil over potential	Pressurized Storage	Refrigerated Flammable Storage
Property Boundary	25	100	200	200	200
Public Access	50	100	200	250	250
Offsite Populations	50	250	500	350	250
Fire water pumps	50	200	200	250	200
ESD and mitigation systems	50	50	50	50	50
Office, lab, Maintenance areas	50	250	-	35	-
Control room	100	250	-	35	-

Source: CCPS Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities, Appendix A

E. Storage Tanks Spacing Requirements (feet) – IRI, CCPS

	3,000<C<10,000 bbl		
Floating Roof Tanks 3,000<C<10,000 bbl	0.5 D	Floating Roof Tanks 10,000<C<300,000 bbl	Pressure Storage vessels – Drums and Bullets
Floating Roof Tanks 10,000<C<300,000 bbl	D	D	
Pressure Storage vessels – Drums and Bullets IRI	1.5 D 100' min.	1.5 D 100' min.	D
Pressure Storage vessels – Drums and Bullets CCPS	2.0 D 100' min	2.0 D 100' min.	D

C = tank capacity; D = tank diameter

Source: IRI IM2.5.2, CCPS

F. Atmospheric Storage Tanks Spacing Requirements - NFPA

	Required Distance
Between Adjacent Tanks (Shell-to-Shell)	1/6 sum of adjacent tank diameters but not less than 3 feet
From Property Line that Is or Can be Built Upon, Including the Opposite Side of a Public Way – With Protection for Exposures	½ times diameter of tank or 175 feet for tanks over 3,000,000 gal (72,000 bbl) capacity
From Property Line that Is or Can be Built Upon, Including the Opposite Side of a Public Way – No Protection for Exposures	Diameter of tank, but need not exceed 175 feet but no less than 5 feet
From Nearest Side of any Public Way or from Nearest Important Building on the Same Property	1/6 times diameter of tank but no less than 5 feet or 60 feet for tanks more than 3,000,000 gallons capacity

Source: NFPA 30

G. Pressurized Liquefied Petroleum Gas Tanks Spacing Requirements - API

	Required Distance
Between Adjacent Tanks (Shell-to-Shell)	5 feet or $\frac{3}{4}$ of larger tank diameter
Adjoining Property Line	75 feet (for 30,000-70,000 gallon tanks)
Control buildings	50 feet
Other buildings	100 feet
Process vessels	50 feet
Flares and other equipment with open flames	100 feet
Fired equipment including process furnaces	50 feet
Rotating equipment, except pumps taking suction from LPG tanks	50 feet 10 feet
Loading facilities	50 feet

Source: API Standard 2510 Design and Construction of LPG Installations, 2001 Edition

4.12.3 Significance Criteria

The CEQA Guidelines do not identify significance criteria for fire protection and emergency response as separate issue areas. Therefore, a set of criteria has been developed against which the significance of the future operation's impacts to fire or other emergency protection can be judged. This document has evaluated fire protection impacts for two general major areas: the general adequacy and design of onsite fire protection systems and the general adequacy of emergency response capabilities. The basis for the thresholds are existing codes and standards.

By examining these two areas, the following significance criteria were developed. The proposed Project would be considered to have a significant impact in the fire protection and emergency response area if:

- The Project Site does not contain adequate fire water or fire foam supplies to meet the recommended CCPS, NFPA Standards, and the IRI guidelines or the CAL FIRE requirements;
- The Project equipment layout and access structure do not meet the API, NFPA, UFC, and IRI or CAL FIRE recommendations for equipment spacing and clearances;
- The Project facilities do not have sufficient capabilities in early fire detection according to the NFPA requirements;
- The Project Site is more than 10 miles (15 minutes) from an emergency response location with fire-fighting capabilities (i.e., a fire station or facility with fire-fighting and emergency response capabilities) or accessibility to the site is difficult or limited causing issues in terms of access, evacuations, and response; or
- The Project Site does not have an emergency response plan.

In addition, in wildfire-risk areas, sufficient fuel modification zones shall be established, not only to allow for defensible space to protect flammable storage and equipment from a wildfire, but also to prevent equipment sparks from operations or maintenance activities from starting a wildfire. These fuel modification zones shall have 10 feet of clearance from all roadways and 30 feet clearance around all equipment.

4.12.4 Project Impacts and Mitigation Measures

This section characterizes the fire protection and emergency response impacts generated by the proposed Project.

Impact #	Impact Description	Phase	Residual Impact
FP.1	Future oil field development activities at the site could be deficient in firewater supplies, equipment layout, detection systems, or emergency response.	Drilling, Construction, Operations	Less Than Significant With Mitigation

Firewater, water used to fight fires, would be obtained from the City of Whittier connection at Catalina Avenue and distributed to the three sites via the backbone pipeline system. Current requirements by NFPA and the LACoFD indicate that firewater supplies should be from 3,000 to 5,000 gpm. Maximum flow capacities at the Catalina Avenue City of Whittier connection are estimated to be 840 gpm at 80 pounds per square inch gauge. This would not be sufficient to meet NFPA or LACoFD requirements and this would be a significant impact.

Based on preliminary design drawings, the site appears to comply with most equipment spacing requirements. However, detailed design drawings are not yet available for the Project. Some equipment spacing could still create impacts, such as the location of the flare relative to process units or atmospheric storage tanks and distances from public areas, such as the hiking trails near the Truck Loading Facility. Inadequate equipment spacing would be a significant impact.

Early fire detection systems are identified on some preliminary design documents. During the Drilling and Testing Phase, temporary equipment would include hydrogen sulfide monitors on the drilling rig and breathing air packs at the rig and in the safety trailer, as well as a temporary fire hydrant at each well site that would connect to other pressurized hydrants with adequate pressure.

Each site's fire protection would include an automated alarm system and fire hydrant system as required by the LACoFD. However, preliminary design documents do not include installation of fire detection and prevention systems, such as foam systems on crude oil storage tanks, flame detection, and flammable gas detection systems. This would be a significant impact.

If an incident required fire protection and emergency services, the closest fire stations to the proposed Project Site would be LACoFD stations #59 and #28, each approximately 2.0 miles from the site with a 5 to 6 minute response time. The LACoFD has extensive resources and planning to direct at an oil field fire and historical incidents associated with existing oil facilities

in the area have been minimal. This response time and capabilities therefore comply with the established significance criteria.

Catalina Avenue and the North Access Road would provide access to the site; these roads would comply with the LACoFD requirements for turning radius and grade (as defined in the regulatory section of Los Angeles County Fire Prevention Regulations).

New development at the proposed Project Site would increase fire risk and fire-fighting requirements. Although detailed plans associated with the proposed Project have not been developed, these plans would include Emergency Response Plans, Spill Prevention Plans, and Oil Spill Response Plans. Additionally, Evacuation Plans would be developed to ensure safety of the field employees and plans would be designed to communicate with surrounding residences and businesses regarding neighborhood evacuations in the event of flammable gas releases, crude oil tank fires, or other relevant events. These plans would be reviewed by the Fire Department and measures would be implemented as part of the permitting phase to ensure that appropriate response capabilities are in place. If these plans are not developed, this would be a significant impact.

Mitigation measures would include measures to ensure proper firewater supply, community outreach, and alert systems, plans reflect current codes, and the development of emergency response plans.

Mitigation Measures

FP-1a The oil field operator shall provide fire water supplies from either the Murphy Station 10-inch line or Suburban Water Supply along Colima Road (both of which are nearby and have sufficient supplies), or some other source, that provides sufficient water supply rates and duration to comply with codes and the LACoFD. Any new pipeline installations shall avoid any sensitive habitats (coastal sage scrub or riparian) and will be placed in non-native grassland or disturbed communities. Any non-native grassland in which new pipeline installations are placed shall be returned to its original state after pipeline installation.

FP-1b The oil field operator shall implement a community alert notification system to automatically notify area residences and businesses in the event of an emergency at the oil field that would require residents to take shelter or take other protective actions.

FP-1c The oil field operator shall ensure that design and construction comply with applicable codes and standards for equipment spacing, particularly those related to flare location and distances to public areas (near the Preserve hiking trails), installation of fire detection and prevention systems, flame detection, flammable gas detection, fire foam, and associated alarms and alert systems.

FP-1d The oil field operator shall develop emergency response plans addressing the facility's fire-fighting capabilities pursuant to the most recent NFPA requirements, Los Angeles County Fire Code, LACoFD, California Code of Regulation, and API requirements, in coordination with LACoFD and the City of Whittier. These plans should include, but not be limited to, fire monitor placement, fire water capabilities, fire detection capabilities, fire foam requirements, facility condition relating to fire-fighting ease and prevention, and measures to reduce impacts to sensitive resources.

Residual Impacts

The LACoFD, and other codes and standards, require firewater supplies of 3,000 to 5,000 gpm. A water pipeline installed from the facilities to the Ocean View Reservoir and the Murphy Booster Station 10-inch water supply line along Ocean View Avenue would provide this supply level, according to discussions with the City. The Ocean View Avenue 10-inch water line is approximately 1,000 feet west of Catalina Avenue within the Preserve. In addition, the Suburban Water Systems main line along Colima Road could also supply water, according to discussions with Suburban Water Systems. This water connection could be made when the crude oil and natural gas pipelines are laid along the Loop Road to Colima Road. These firewater supplies would be sufficient and the sources are relatively close. With this mitigation, this impact would be less than significant.

Ensuring that equipment spacing complies with codes and standards before construction would ensure that impacts associated with equipment spacing would be less than significant. Early fire detection systems are critical for ensuring that any release response is effective and quick. Notification of area residences and businesses would also facilitate effective emergency response. Notification systems would be initiated by the LACoFD or the sheriff or police departments.

Development of appropriate response plans, in coordination with the LACoFD, would also ensure effective response activities.

Mitigation measures F-1a through F-1d would reduce impacts to less than significant with mitigation.

Impact #	Impact Description	Phase	Residual Impact
FP.2	Future oil field development activities at the site could increase the risk of wildfires.	Drilling, Construction, Operations	Less Than Significant With Mitigation

Introducing industrial development into an area that is classified as a very high fire hazard zone without the proper equipment or planning would be a significant impact. Industrial development could produce sparks due to electrical equipment, engines or vehicles, which could start a wildfire and produce impacts to nearby homes and biological resources in the area. This would be considered a significant impact.

These impacts could be mitigated by ensuring that brush and trees are not close to sources of ignition and that emergency response plans and equipment address issues related to wildfire risks.

FP-2a The oil field operator shall ensure that fuel modification areas create at least 30 feet of clearance from all oilfield equipment and 10 feet from all roadways to reduce the potential for ignition sources starting wildfires. Firewater monitors located within the facility should be placed so that sprays could reach beyond the facility walls by at least 30 feet and could be used to extinguish a wildfire started at the facility fence line. Fire hydrants shall be placed along all roadways, spaced according to LACoFD Fire Prevention Regulations Chapter 8 or as specified by LACoFD. The Applicant shall ensure that appropriate wildfire response equipment is located at the site or at the Rangers residence if the Ranger Residence is located near the site.

FP-2b Emergency response plans shall address the issues related to wildfire risks and response, including coordination with the area residences, the Preserve Rangers and the LACoFD, as well as first response tactics and equipment.

Residual Impacts

Sufficient clearance around oil field equipment to avoid sparks or ignition sources starting a wildfire in the area would also reduce the impacts of industrial development in this very high fire hazard severity zone.

Mitigation measures F-2a and F-2b would reduce impacts to less than significant with mitigation.

4.12.5 Other Issue Area Mitigation Measure Impacts

Mitigation measures proposed for other issues areas could increase impacts to fire protection and emergency service if they are implemented. This section discusses those potential mitigation measure impacts.

None of the mitigation measures proposed for impacts related to other issue areas would change fire protection and emergency service impacts. Therefore, the mitigation measures would not result in additional significant impacts, and additional analysis or mitigation is not required.

4.12.6 Cumulative Impacts and Mitigation Measures

Cumulative projects that would draw on the same emergency response resources could impact the fire protection analysis of the proposed Project. The LACoFD, the primary responder for the Project Site, maintains several fire stations located proximate to the Project Site, which should be able to provide sufficient fire protection services for the proposed Project and cumulative impacts would be less than significant.

4.12.7 Mitigation Monitoring Plan

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
FP-1a The oil field operator shall provide fire water supplies from either the Murphy Station 10-inch line or Suburban Water Supply along Colima Road (both of which are nearby and have sufficient supplies), or some other source, that provides sufficient water supply rates and duration to comply with codes and the LACoFD. Any new pipeline installations shall avoid any sensitive habitats (coastal sage scrub or riparian) and will be placed in non-native grassland or disturbed communities. Any non-native grassland in which new pipeline installations are placed shall be returned to its original state after pipeline installation.	Additional firewater supplies	Design of firewater supply systems	Before drilling or construction	LACoFD and City of Whittier
FP-1b The oil field operator shall implement a community alert notification system to automatically notify area residences and businesses in the event of an emergency at the oil field that would require residents to take shelter or take other protective actions.	Community alert systems	Installation and operation of community alert notification system	Before operations	City of Whittier
FP-1c The oil field operator shall ensure that design and construction comply with applicable codes and standards for equipment spacing, particularly those related to flare location and distances to public areas (near the Preserve hiking trails), installation of fire detection and prevention systems, flame detection, flammable gas detection, fire foam, and associated alarms and alert systems.	Fire prevention and detection systems	Design documents showing fire detection systems and equipment spacing.	Before operations	LACoFD and City of Whittier

4.12 Fire Protection and Emergency Services

Mitigation Measure	Requirements	Compliance Verification		
		Method	Timing	Responsible Party
FP-1d The oil field operator shall develop emergency response plans addressing the facility's fire-fighting capabilities pursuant to the most recent NFPA requirements, Los Angeles County Fire Code, LACoFD, California Code of Regulation, and API requirements, in coordination with LACoFD and the City of Whittier. These plans should include, but not be limited to, fire monitor placement, fire water capabilities, fire detection capabilities, fire foam requirements, facility condition relating to fire-fighting ease and prevention, and measures to reduce impacts to sensitive resources.	Emergency Response Plans	Submission of emergency response plan	Before drilling and operations	LACoFD and City of Whittier
FP-2a The oil field operator shall ensure that fuel modification areas create at least 30 feet of clearance from all oilfield equipment and 10 feet from all roadways to reduce the potential for ignition sources starting wildfires. Firewater monitors located within the facility should be placed so that sprays could reach beyond the facility walls by at least 30 feet and could be used to extinguish a wildfire started at the facility fence line. Fire hydrants shall be placed along all roadways, spaced according to LACoFD Fire Prevention Regulations Chapter 8 or as specified by LACoFD. The Applicant shall ensure that appropriate wildfire response equipment is located at the site or at the Rangers residence if the Ranger Residence is located near the site.	Fuel modification areas	Fire prevention plans showing fuel modification areas	Before drilling and operations	LACoFD and City of Whittier
FP-2b Emergency response plans shall address the issues related to wildfire risks and response, including coordination with the area residences, the Preserve Rangers and the LACoFD, as well as first response tactics and equipment.	Wildfire response planning	Emergency response plans showing wildfire planning and preparation	Before drilling and operations	LACoFD and City of Whittier