

4.7 FIRE PROTECTION

4.7.1 Project Setting

The Project site is located at 6516 Cat Canyon Road in Santa Maria, approximately ten miles southeast of the communities of Santa Maria and Orcutt in northern Santa Barbara County, California. The Project site and surrounding areas currently support oil and gas production, grazing, and other agricultural operations. The site contains four Aera non-producing test wells and four active oil production wells operated by ERG Resources, LLC.

4.7.1.1 Santa Barbara County Fire Department

The Project site is under the jurisdiction of the Santa Barbara County Fire Department. Emergency entrances at Cat Canyon and Long Canyon Roads will be within approximately seven to eight minutes of response time from the nearest Fire Station (Station No. 23, 5003 Depot Avenue) located in Sisquoc, California. In the event of a brushfire or other large-scale response effort, four engines would be deployed from the following stations (Alexander, Station No. 23 Captain, personal communication, December 2013):

- Station 21 (335 Union Avenue, Orcutt);
- Station 22 (1596 Tiffany Drive, Santa Maria);
- Station 23 (5003 Depot Avenue, Sisquoc); and
- Station 24 (99 Centennial, Los Alamos).

4.7.1.2 Project Design and Master Fire Protection Plan

The Project involves the drilling and production of crude oil at well depths of about 3,000 feet, using the enhanced oil recovery method of steam injection. An expected total of 141 production wells and 107 continuous steam injection wells will be utilized. In addition, there will be seven steam generators, a processing facility, gathering and distribution pipelines, and related ancillary equipment. When the field is at full operational capacity (forecasted in 2032), the Project is expected to produce:

- 10,000 barrels of oil per day;
- 36,000 barrels of water per day; and
- 1,000,000 standard cubic feet of gas per day.

The Project has been designed in accordance with applicable fire codes and standards as outlined within the Master Fire Protection Plan developed by Collings & Associates, LLC (Appendix Q). Please refer to the Master Fire Protection Plan for a complete inventory of Project design measures, specifications, and placement.

Fire hazard scenarios at the central processing facility, steam generating site, and office, control and warehouse buildings have been assessed and design requirements established in the Master Fire Protection Plan (Collings, 2014). Table 4.7-1 – Potential Fire Hazard in Primary Areas of Risk and Fire Protection Control/Project Design, provides a summary of these three

areas, the greatest potential for fire hazards in these areas, and the components that have been incorporated into the Project design to minimize fire hazards.

Table 4.7-1. Potential Fire Hazard in Primary Areas of Risk and Fire Protection Control/Project Design

Area	Potential Fire Hazard	Fire Protection Control Scenario	Recommendation and Project Design
Central Processing Facility (CPF)	Largest fire scenario incident would be based upon a failure in the crude oil storage tank	The Santa Barbara County Fire Department's typical policy requires the resources on site to provide an offensive firefighting strategy in the event of a fire incident at the tank battery. The Santa Barbara County Fire Department is requiring a fixed water supply and pressurized fire hydrants at the CPF and tank battery for firefighting in the event of a fire incident.	The CPF area will be provided with a dedicated fire protection system which will include the following: <ul style="list-style-type: none"> • Dedicated fire water storage (tank) supply • Nine (9) new Santa Barbara County Fire Department compliant fire hydrant connections • Five (5) new fixed monitors with educators to be installed to apply either water or 3% AFFF foam solutions to the tanks and containment area, with a single 265 gallon AFFF concentrate tote located adjacent to each monitor, with weatherproof coverings. This will provide a minimum fixed on-site 1,060 gallon bulk supply of AFFF foam concentrate maintained at the monitor locations.
Steam Generation Site (SGS) (Six, once-through-steam generator [OTSG] units), produced gas scrubber, produced gas steam generator, and Southern California Gas Company pipeline connection	The principal process hazard at this location would likely involve a gas fuel supply or burner failure at one or more units, resulting in a continuous natural gas fueled fire.	With very limited combustible components and recommended brush clearances and vegetation management, emergency shutdown of the natural gas fuel supply to the entire Steam Generation Site would be the most effective fire protection control scenario.	Automated shut-down valves will be provided on the fuel gas supply system at: <ol style="list-style-type: none"> 1. The point of receipt from Southern California Gas Company. 2. The inlet to central fuel gas scrubber on the Steam Generation Site (SGS) 3. On each piece of fired equipment as part of the burner management system. Portable fire extinguishers

Table 4.7-1. Potential Fire Hazard in Primary Areas of Risk and Fire Protection Control/Project Design

Area	Potential Fire Hazard	Fire Protection Control Scenario	Recommendation and Project Design
Office, Control and Warehouse Buildings	The office, control and warehouse buildings present the usual types of fire hazards and risks associated with commercial and industrial occupancies.	The risks would be mitigated by code compliant construction and safe operations within the facilities and by implementing fire safety management practices and procedures, such as drills, inspections, and audits.	Monitored, automatic wet fire sprinkler systems will be installed to control an interior fire and to automatically communicate a system activation to the Santa Barbara County Fire Department.
Other	Brush and vegetation	Risks to be mitigated by adherence to Santa Barbara County Fire Department Standard 6 (Clearances)	<ul style="list-style-type: none"> • Ground areas must be kept free of weeds, trash and other combustible materials • Remove vegetation within 10 feet from power poles. • Remove flammable vegetation within 10 feet from roads, or reduce to a maximum of 4" stubble height. • Remove vegetation within 30 feet from structures, tanks and containment areas (Exception: vegetation less than 18" in height above the ground need not be removed where necessary to stabilize the soil and prevent erosion.)
Notes: CPF = Central Processing Facility SGS = Steam Generator Sites		OTSG = Once Through Steam Generators AFFF = Aqueous Film-Forming Foam	

Source: Collings, 2014

Water Storage Requirements. Minimum fire protection water storage will be 76,500 gallons. Water will be delivered from a new dedicated fire protection piping system connected to an elevated water tank on-site, eliminating the need for a fire pump and motor.

Roadways. All roadways will meet Santa Barbara County Fire Department requirements, which include the following:

- Primary fire access roads will be 24 feet in width and 13'-6" vertical clearance;
- Secondary fire access roads will be 20 feet in width and 13'-6" vertical clearance;
- Fire lanes will be provided as set forth in California Fire Code Section 902;
- Fire access to be provided within 150 feet of outside building perimeter;
- Fire access road to be able to support 40,000 pound emergency vehicles; and
- Install Knox box with proper access at the main entrance gate as required by Santa Barbara County Fire Department standards.

Proper Storage and Handling of Hazardous Materials On-site. All new tanks holding hazardous, toxic, flammable or combustible liquids will be provided with National Fire Protection Association Code 704 (Identification), with markings located where they can be readily seen by the Santa Barbara County Fire Department on approach from fire department access roads.

4.7.1.3 Aera Emergency Response Policy

Aera management's philosophy is to provide fire protection resources to the fire department for purposes of life safety, environmental protection, and asset protection. Aera employs a policy of fire prevention through proper design, equipment/process maintenance and strict safety procedures. These include the following:

- Prevention through safe practices and standard operating procedures;
- Immediate reporting of a fire incident to supervision;
- Fire department notification;
- Isolation of the fuel supply to a fire incident;
- Emergency process shut down procedures;
- Limited personnel firefighting (utilizing fire extinguishers or portable foam units); and
- Coordination and support for responding local fire department agencies.

Aera has an established Code of Safe Practices, which includes a section focused on fire prevention. Section 12 of the Aera Program's Code of Safe Practices includes guidelines for employees for the prevention, control and reporting of fire incidents.

Pre-Incident Plan. A pre-incident plan will be developed by Aera and provided to Santa Barbara County Fire Department. Items addressed in the plan will include but not be limited to the following:

- Staging area for emergency vehicle response;
- Plans to handle the accumulation and drainage of fire suppression water;
- Traffic control plan;
- Mutual aid agreement;
- Established training at site; and
- Documentation of all hazardous materials on-site.

4.7.2 Regulatory Setting

Fire protection requirements are established by the California Fire Code 2013. The "Authority Having Jurisdiction" may require additional fire protection infrastructure depending upon the hazard. Santa Barbara County Fire Marshall is the Authority Having Jurisdiction. In addition to the California Fire Code 2013, Santa Barbara County has Fire Department Development Standards that apply in to the Project (Table 4.7-2 – Santa Barbara County Fire Prevention Division Development Standards).

Table 4.7-2. Santa Barbara County Fire Prevention Division Development Standards

Standard	Description
Development Standard No. 1 Private Roadway and Driveway Standards	Establishes minimum standards for driveways and private roads. These standards outline minimum road widths and vegetation clearance designed to provide fire vehicles access to residences and associated structures.
Development Standard No. 2 Fire Hydrant Spacing and Water Flow Rates	Establishes fire hydrant spacing, discharge outlet configuration and flow rate requirements. Flow rate standards are used when calculating peak load water supply requirements for one-and-two family dwelling units.
Development Standard No. 3 Stored Water Fire Protection Systems Serving One and Two-Family Dwellings	Establishes standards for stored water fire protection systems serving one and two-family dwellings.
Development Standard No. 4 Automatic Fire Sprinkler System Standards	Establishes standards for automatic fire sprinkler systems.
Development Standard No. 5 Automatic Alarm System Standards	Establishes standards for automatic alarm systems.
Development Standard No. 6 Vegetation Management Plan	Establishes standards for vegetation management plans.
Development Standard No. 7 Access Gates	Establishes standards for gates on private roads and private driveway access points.

Source: Santa Barbara County Seismic Safety and Safety Element, 2010

4.7.3 Impact Assessment Standards

4.7.3.1 CEQA Guidelines

As defined in Appendix G of the State CEQA Guidelines, a project would have a significant impact on public fire protection service if it would result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

4.7.3.2 Santa Barbara County Fire Department

Additionally, the following Santa Barbara County Fire Department standards are applied in evaluating impacts associated with the proposed development:

- The emergency response thresholds include Fire Department staff standards of one on-duty firefighter per 4,000 persons (generally one engine company per 12,000 people, assuming three firefighters per station). The emergency response time standard is approximately five to six minutes;
- Water supply thresholds include a requirement for 750 gallons per minute at 20 pounds per square inch for all single family dwellings;
- The ability of the County's engine companies to extinguish fires (based on maximum flow rates through hand held line) meets state and national standards assuming a 5,000 square foot structure. Therefore, in any portion of the Fire Department's response area, all structures over 5,000 square feet are an unprotected risk (a significant impact) and therefore should have internal fire sprinklers;
- Access road standards include a minimum width (depending on number of units served and whether parking would be allowed on either side of the road), with some narrowing allowed for driveways. Cul-de-sac diameters, turning radii and road grade must meet minimum Fire Department standards based on project type; and
- Two means of egress may be needed and access must not be impeded by fire, flood, or earthquake. A potentially significant impact could occur in the event any of these standards is not adequately met.

4.7.4 Impact Analysis

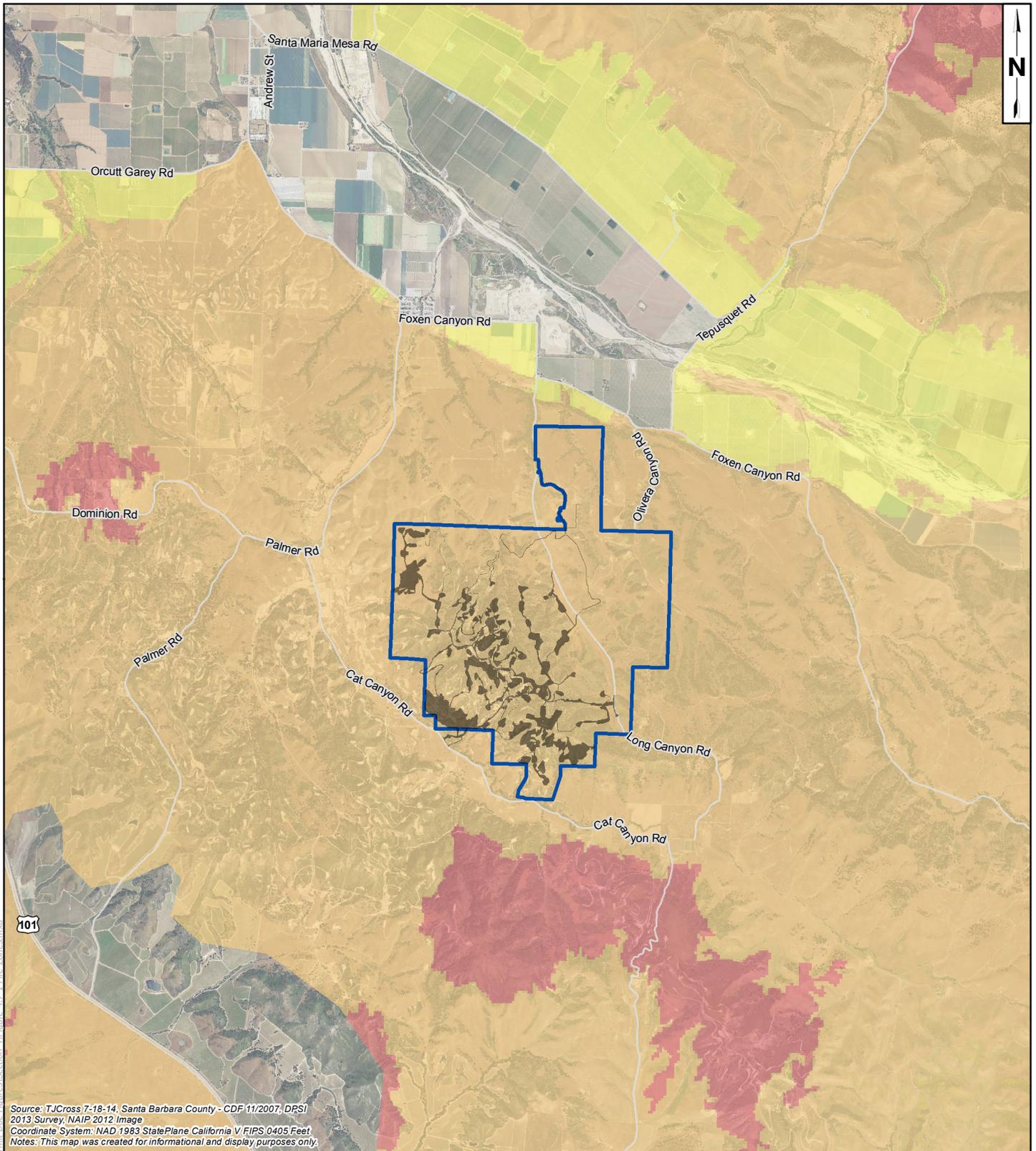
4.7.4.1 Introduction of Development into an Existing High Fire Hazard Area

As shown on Figure 4.7-1 – Fire Zones in Relation to Project Site, the Project site is located within a high fire hazard area. Construction and operation of the proposed oil wells presents new ignition sources that could potentially start a fire. Additionally, installation of pipelines may include the use of welding equipment, construction equipment and vehicles, which have the potential to be an ignition source. In order to mitigate these potentially significant impacts, several improvements to the Project site to ensure proper emergency access and procedures in the event of an emergency have been included. These mitigations include, but are not limited to, the construction of and/or improvements to access roads, the development of an onsite stored water system, the placement of portable fire extinguishers at the well sites, etc. as outlined within the Collings report (September, 2014; Appendix Q) and summarized in Table 4.7-1 – Potential Fire Hazard in Primary Areas of Risk and Fire Protection Control/Project Design. Therefore, impacts due to introduction of the Project components into a high fire hazard area would be less than significant with incorporation of these measures.

4.7.4.2 Project Fire Hazards

As detailed within Table 4.7-1 – Potential Fire Hazard in Primary Areas of Risk and Fire Protection Control/Project Design, there are several Project components proposed that have the potential to result in a fire hazard. Specifically, according to the Master Fire Protection Plan

developed for the Project, the principal fire protection hazards at the Project site would be located at the central processing facility at the crude and light oil storage tanks due to the quantities of flammable/combustible liquids to be stored in those tanks (Appendix Q) (Collings, 2014).



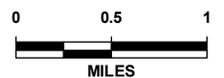
Aera Energy LLC Property Boundary

Fire Hazard Severity Zones within State Responsibility Area (SRA)

High

Moderate

Very High



PROJECT NAME:
**EAST CAT CANYON
 OIL FIELD REDEVELOPMENT PROJECT**
 PROJECT NUMBER: 1002-0455 DATE: September 2014

**FIRE ZONES IN RELATION
 TO PROJECT SITE**

FIGURE
4.7-1

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The Project has been designed in accordance with all applicable fire codes, standards, and design recommendations in order to avoid potential fire hazards. Due to the low likelihood of a Project-caused fire, in addition implementation of Project-incorporated minimization and avoidance measures, a less than significant impact will result.

4.7.4.3 Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

The Project includes provision of a dedicated fire water storage (tank) supply system. As outlined within the Master Fire Protection Plan developed for the Project, pressurized fire protection water supplies would be required to support the central processing facility storage tanks for both cooling, extinguishment and foam system application (Appendix Q) (Collings, 2014). The provisions of National Fire Protection Association Code 11 (Low, Medium, and High Expansion Foam) would be utilized to establish the required foam firefighting system requirements. Minimum fire protection water storage (in addition to domestic and process stored water) be 76,500 gallons. Water will be delivered to the required site locations from a new dedicated fire protection piping system connected to an elevated 3,000 barrel (126,000 gallon) water tank on-site. New eight inch dedicated fire service piping will be connected to the water tank, which will be routed to an eight inch looped fire service piping serving the central processing facility and the site buildings. The loop will provide pressurized water delivery to the site hydrants, fire protection monitors, and building fire sprinkler systems.

Additionally, several improvements to the Project site to ensure proper emergency access have been included. These requirements include, but are not limited to the construction of and/or improvements to existing access roads on site based on minimum Santa Barbara County Fire Department standards. Two means of egress will be available based on these improvements.

A less than significant impact with respect to water pressure, availability, and access for fire-fighting will result following implementation of these design measures.

4.7.4.4 Introduction of Development that will Hamper Fire Prevention Techniques Such as Controlled Burns or Backfiring in High Fire Hazard Areas

Although additional Project structures are proposed within a high fire hazard area, the new development has been primarily sited within areas previously disturbed during former operations that would not have been within areas used for controlled burns or backfiring. In accordance with Santa Barbara Fire Department Development Standards, ground areas within the vicinity of the Project site will be kept free of weeds, trash, and other combustible materials. Specifically, as part of the Project design, vegetation will be removed from within ten feet of power poles and within 30 feet from structures. Additionally, flammable vegetation will be removed or reduced to a maximum of four inches of stubble within ten feet from roads. A less than significant impact to existing fire prevention techniques would result.

4.7.4.1 Development of Structures Beyond Safe Fire Department Response Time

According to the Santa Barbara County Fire Department, the existing response time to the Project site is approximately seven to eight minutes. The Project would not introduce any components that would change this response time, and has been designed to improve site access

through construction of and/or improvements to existing site access roads. No significant impact to existing fire department response times would result.

4.7.5 Project-Incorporated Avoidance and Minimization Measures

- **FIRE- 1. Master Fire Protection Plan.** All recommended measures included within the Master Fire Protection Plan (Collings, 2014) will be incorporated into the Project design. These measures include, but are not limited to, the following:
 - a) The central processing facility area will be provided with a dedicated fire protection system;
 - b) The facility includes a minimum of 76,500 gallon tank for dedicated fire protection water storage;
 - c) The central processing facility hydrants and monitors will be hard piped and supplied by a new eight inch dedicated fire service water supply line/looped system;
 - d) The pressurized hydrant piping system includes new hydrants as indicated Master Fire Protection Plan Sheets-1 through -5; are spaced not to exceed 500-foot intervals (300 feet in noted areas near buildings), and with a minimum fire flow of 750 gallons per minute;
 - e) The application of the foam solution will be accomplished by on-site foam delivery systems;
 - f) The emergency access roads will meet Santa Barbara County Fire Department requirements;
 - g) Brush and vegetation clearance will be maintained in accordance with Santa Barbara County Fire Department Standard Code 6 (Clearances);
 - h) Produced crude loading will comply with California Fire Code Section 3406.5;
 - i) Electrical grounding or bonding will be provided in accordance with sections 6.5.4.1 through 6.5.4.5 of National Fire Protection Association Code 30;
 - j) A means to quickly shut down the facility in the event of an emergency will be provided;
 - k) Accessible, well-labeled emergency gas line shutoff valves on supply lines to all gas fired equipment at the site will be provided;
 - l) Portable Fire Extinguishers with a minimum rating of 20-A:B:C will be provided where required by Santa Barbara County Fire Department, at a maximum of 75 feet between extinguisher locations;
 - m) Premises identification at the main gate entrance to the facility will be in accordance with Santa Barbara County Fire Department Standard 2;
 - n) All new tanks holding hazardous, toxic, flammable or combustible liquids will be provided with National Fire Protection Association Code 704, , with markings

located where they can be readily seen by the Santa Barbara County Fire Department on approach from fire department access roads;

- o) National Fire Protection Association Code 13 compliant monitored fire sprinkler systems in the control, warehouse, shop and office buildings will be installed;
- p) A fire sprinkler fire alarm monitoring system, which has central station water flow alarm monitoring service, will be installed and maintained for automatic fire department notification;
- q) The steam generator site will be provided with portable fire extinguishers in accordance with California Fire Code and Santa Barbara County Fire Department requirements; and
- r) A pre-incident plan will be developed and provided to Santa Barbara County Fire Department.

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