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SECTION ACRONYMS/ABBREVIATIONS

| ACRONYM/ ABBREVIATION | DEFINITION |
|--------------------------|--|
| AFC | Application for Certification |
| CAA | Clean Air Act |
| Cal-ARP | California Accidental Release Prevention |
| Caltrans | California Department of Transportation |
| CCR | California Code of Regulations |
| CEC | California Energy Commission |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CEQA | California Environmental Quality Act |
| CO ₂ | Carbon Dioxide |
| CUPA | Certified Unified Program Agency |
| DOT | United States Department of Transportation |
| EPA | United States Environmental Protection Agency |
| ERPG-2 | Emergency Response Planning Guideline Level 2 |
| GE | General Electric |
| HDPE | High-Density Polyethylene |
| I | Interstate |
| LORS | Laws, Ordinances, Regulations and Standards |
| mg/m ³ | Milligrams per Cubic Meter |
| MSDS | Material Safety Data Sheets |
| NERC | North American Electric Reliability Corporation |
| NIOSH | National Institute of Occupational Safety and Health |
| NO _x | Nitrogen Oxides |
| OES | California Office of Emergency Services |
| Orange Grove Energy | Orange Grove Energy, L.P. |
| OSHA | Occupational Safety and Health Administration |
| ppm | Parts per Million |
| ppmv | Parts per Million by Volume |
| Project | Subject of this AFC application, Orange Grove Project |

| ACRONYM/ ABBREVIATION | DEFINITION |
|--------------------------|---|
| Project Site | Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. "Site") |
| RMP | Risk Management Plan |
| SARA | Superfund Amendments and Reauthorization Act |
| SCR | Selective Catalytic Reduction |
| SDG&E | San Diego Gas & Electric |
| Site | Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. "Site") |
| SPCC | Spill Prevention, Control and Countermeasures |
| SR | State Route |
| STPEL | Short-Term Public Emergency Limit |

6.15 HAZARDOUS MATERIALS HANDLING

This section identifies hazardous materials that will be used for the Project, measures in place for safe handling of these materials, and evaluates potential impacts. Design features have been incorporated into the Project regarding the storage and use of hazardous materials to minimize the potential for impacts. After a hazardous material is used, it may turn into a hazardous waste, requiring disposal or treatment at an appropriately licensed facility. Hazardous wastes are discussed in Section 6.14, Waste Management.

Aqueous ammonia is the only hazardous material that will be present onsite in a quantity requiring a Risk Management Plan (RMP) under California Accidental Release Prevention (Cal-ARP) regulations. The aqueous ammonia to be used onsite will not be concentrated enough to require an RMP under federal regulations, but state regulations are more stringent. Key design features of the Project that keep potential impacts of aqueous ammonia storage below a level of significance include the following:

- Choice of aqueous form of ammonia, rather than anhydrous, to reduce consequences if there were an accidental release.
- Choice of 19.0 percent (by weight) aqueous ammonia concentrations to further reduce potential hazard from the usual commercial concentration of 29.4 percent (by weight).
- Secondary containment at the aqueous ammonia storage tank and truck unloading facility, designed to limit volatilization from the aqueous ammonia in the event of an accidental release.

Worker safety programs described in Section 6.17 will address hazardous materials storage locations, emergency response procedures, employee training requirements, hazard recognition, fire control procedures, hazard communications training, personal protection equipment training and release reporting requirements. The program of employee training for safe handling of hazardous materials will include both initial and refresher training to assure that appropriate personnel are kept up to date on coordination with response agencies, proper use of onsite emergency response equipment, and hazardous materials information contained in the Hazardous Materials Business Plan, and Spill Prevention, Control and Countermeasures (SPCC) Plan. The Business Plan will contain detailed instructions for plant personnel to follow in the event of a hazardous material release, fire, flood, earthquake or explosion. Maps, diagrams, contacts, teams, first aid and a description of the Incident Command System will be included.

Section 4.0 in this Application for Certification (AFC) provides a description of how facility closure will be accomplished in the event of premature or unexpected cessation of operations, including hazardous materials handling.

6.15.1 Existing Conditions

The Site is located on a former citrus grove located in an unincorporated area of San Diego County. Currently there is no routine use of hazardous materials at the Site.

Transportation corridors, including Interstate (I) 15 and State Route (SR) 76, carry truck traffic transporting hazardous materials. A regional natural gas pipeline corridor occurs near the intersection of SR 76 and Rice Canyon Road.

Section 112(r) of the Clean Air Act (CAA) established the federal program to manage the risks of hazardous materials and the potential offsite consequences of an accidental release. The California Office of Emergency Services (OES) established the Cal-ARP Program to carry out the federal requirements. The Cal-ARP Program specifies those hazardous materials and quantities that require preparation of a RMP and analysis of offsite consequences.

The Cal-ARP Program defines three program levels with different requirements, depending on the accident history and potential impact of releases of regulated substances. The Program requires that the owner or operator coordinate closely with the administering agency to determine the appropriate level of documentation required for an RMP. At a minimum, the RMP includes one worst-case release scenario and offsite consequence analysis for each process utilizing a Regulated Substance, a 5-year accident history for the process, assurance that response actions have been coordinated with local emergency planning and response agencies, and certification that no additional measures are necessary to prevent offsite impacts from accidental releases.

Aqueous ammonia is the only hazardous material that will be stored at the Site in quantities in excess of Cal-ARP thresholds. Based on the analysis of the worst-case and alternative release scenarios outlined in Section 6.15.2.2.7, the Project qualifies for Program 1 under Cal-ARP. Under Program 1, an RMP will be developed and approved prior to the arrival of aqueous ammonia at the Site. This RMP will include the following minimum requirements:

- Description of the worst-case scenario and offsite consequence analysis (see Sections 6.15.2.2.7 and 6.15.2.2.8).
- Documentation that the nearest public receptor¹ is beyond the distance to the toxic endpoint for aqueous ammonia.
- Documentation that, during the past 5 years, the processes using aqueous ammonia have had no accidental release that caused offsite impacts².
- Assurance that response actions have been coordinated with local emergency planning and response agencies.
- Certification that "no additional measures are necessary to prevent offsite impacts from accidental releases."

¹ A public receptor is defined as "...offsite residences, institutions (e.g., schools, hospitals), industrial, commercial, and office buildings, ... parks, or recreational areas inhabited or occupied by the public at any time without restriction by the stationary source where members of the public could be exposed to toxic concentrations, radiant heat, or overpressure, as a result of an accidental release."

² Offsite impacts for the purpose of the 5-year accidental release history include death, injury, or response or restoration activities for an exposure of an environmental receptor (CCR Title 19, Division 2, Chapter 4.5, Section 2735.4).

There are no schools, hospitals, day-care facilities, emergency response facilities nor long-term health care facilities located near the Site, nor along SR 76 between I-15 and the Site, which is the portion of SR 76 that would be used for transport of hazardous materials related to the Project. The nearest public receptor to the Site is a single family residence located approximately 0.4 mile northwest. Figure 6.15-1 provides a 1:24,000 scale map showing a 1.0 mile radius from the Site centroid and a 0.25 mile radius from SR 76 between I-15 and the Site. No schools, hospitals, day-care facilities, emergency response facilities or long term health care facilities are shown on Figure 6.15-1 because none occur or are planned to be constructed within these radii.

6.15.2 Impacts

Significance criteria were determined on the basis of the California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form, and on performance standards and thresholds adopted by responsible agencies. An impact may be considered significant if a project:

- Creates a significant hazard to the public or the environment through the routine transport, use or disposal of a hazardous material.
- Creates a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material into the environment.
- Emits hazardous emissions or involves handling a hazardous material, substance or waste within 0.25 mile of an existing or proposed school.
- Is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, creates a significant hazard to the public or the environment.
- Impairs implementation of, or physically interferes with, an adopted emergency response plan or emergency evacuation plan.

Hazardous materials that will be used or stored for Project operations include aqueous ammonia, petroleum products, flammable and compressed gasses, and minor amounts of paints, solvent and other materials required for maintenance.

Hazardous materials will be transported to the Project by licensed vendors. Because these hazardous materials are transported in interstate commerce, they are not the responsibility of an individual customer (e.g., Orange Grove Energy, L.P. [Orange Grove Energy]) but, instead, are regulated by the United States Department of Transportation (DOT) and the California Department of Transportation (Caltrans).

Ammonia is needed for the selective catalytic reduction (SCR) system to reduce nitrogen oxides produced by natural gas combustion. The 19 percent concentration aqueous ammonia has been selected for the Project due to its more basic safe handling requirements compared to more

concentrated aqueous solutions or anhydrous ammonia, which is the pressurized gaseous form of ammonia.

Specific features have been incorporated into the Project design to keep potential impacts below a level of significance, as shown in the quantitative offsite consequence analysis (see Section 6.15.2.2.8).

Potentially significant impacts will be avoided because hazardous materials will be transported, handled, used and disposed of in ways that prevent the release of these materials. An accidental release can only occur if hazardous materials are handled improperly or if a catastrophic event occurs. Although the probability of such event occurring is extremely low, design features have been included in the Project to reduce potential impacts to a level that is less than significant.

A Phase I Environmental Site Assessment for the Site is included in Appendix 6.14-A. The Site is not on the hazardous waste and substances sites list prepared pursuant to Government Code Section 65962.5 (Cortese List).

6.15.2.1 Construction Impacts

During Project construction, hazardous materials stored onsite will include materials such as paints, coatings and adhesives, compressed gasses, and petroleum products. Hazardous materials stored onsite for construction will be stored in a locked utility shed or secured in a fenced area and protected from weather. Fuels, lubricants and other materials needed for operation of construction equipment will be transported to the Site on an as-needed basis by contractors.

Contractors will be required to provide qualified personnel that are trained in their job duties for construction including appropriate handling of hazardous materials to comply with applicable laws and regulations. During construction, an onsite safety supervisor will be designated to implement health and safety programs and, if necessary, to contact emergency response personnel and the nearest hospital. Material Safety Data Sheets (MSDS) will be kept onsite for each chemical used at the plant, and construction employees will be aware of their location and content.

Construction contractors for the Project will be required to have or develop standard operating procedures for servicing and fueling construction equipment. These procedures will, at a minimum, include the following:

- No smoking, open flames or welding will be allowed in fueling/service areas.
- Fueling, service and maintenance will be conducted only by trained personnel.
- Refueling will be conducted only with pumps, hoses and nozzles designed for this purpose.
- Disconnected hoses will be handled in a manner to prevent residual fuel and liquids from being released into the environment.

- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Accidental spills will be cleaned up immediately. Impacted soil will be containerized and managed pursuant to applicable laws, ordinances, regulations and standards (LORS).
- Emergency phone numbers will be available onsite.
- Containers used to store hazardous materials will be properly labeled and kept in good condition.

Orange Grove Energy will require contractors to comply with all applicable LORS for handling of hazardous materials during construction. Compliance with LORS, safety training programs, and standard operating procedures for spill prevention will result in a less than significant potential for serious hazardous materials incidents. No additional measures beyond those above are needed to reduce the potential impacts for impacts below a level of significance.

6.15.2.2 Operations Impacts

Hazardous materials will be used and stored onsite to support the operation of the Project. Table 2.8-1 in Section 2.0, Generation Facility Description, Design and Operation, identifies the hazardous materials to be used. The inventory of hazardous materials for the Site will be kept up to date in the Hazardous Materials Business Plan to be submitted to the Certified Unified Program Agency (CUPA), in accordance with requirements of California Code of Regulations (CCR) Title 19, Division 2, Chapter 4, Article 4 and San Diego County Code of Regulatory Ordinances, Title 6, Division 8, Chapter 11.

6.15.2.2.1 General Operating Practices for Hazardous Materials

Hazardous material will be stored at designated locations designed for the purpose. Most hazardous material will be contained in equipment or tanks. On occasions when hazardous materials are delivered to the Site in drums or other containers, they will be stored in their original delivery containers until used. Hazardous chemical storage areas will be designed with secondary containment to prevent leaks or spills from being released to the environment. Tanks containing hazardous chemicals will have secondary containment capable of holding the largest reasonably foreseeable spill (e.g., the tank contents for a single-tank containment), plus precipitation from a 24-hour, 25-year storm event if secondary containment is not sheltered from weather.

Hazardous materials will be handled in accordance with applicable LORS. Incompatible materials will be stored separately.

Personal protection equipment will be provided for workers handling hazardous materials. Personnel working with chemicals will be trained in proper handling techniques and emergency response procedures to chemical spills or accidental releases. Details of training and safety programs for workers are described in Section 6.17. Several programs at the plant will address

hazardous materials storage locations, emergency response procedures, employee training requirements, hazard recognition, fire control procedures, hazard communications training, personal protection equipment training, and release reporting requirements. These programs will address chemical risk management in accordance with Cal-ARP regulations, the Hazardous Materials Business Plan, SPCC plan, worker safety program, fire response program, plant safety program and facility standard operating procedures.

6.15.2.2.2 *Petroleum Products*

The potential for impacts from petroleum-containing hazardous materials will be less than significant because of the following spill prevention and safe handling measures:

- Petroleum products will be delivered and stored in containers approved by the DOT, which are capable of resisting impacts that may potentially occur during transport and handling (e.g., 55-gallon steel drums).
- Bulk petroleum storage and use will be limited to locations designed for this purpose. Secondary containment will be provided at all bulk storage locations.
- Process areas of the Site will be designed to contain surface drainage.
- Equipment oil reservoir levels will be checked frequently. If a level changes significantly, corrective action will be triggered immediately.
- Equipment oil reservoirs will have alarms and high- and low-level sensors. The sensors, alarms and associated instrumentation are calibrated regularly.
- Small pumps and other lubricated equipment will have pans to contain drips from gaskets or seals. Excessive leaks will be promptly corrected by plant maintenance programs.

A comprehensive plan for responding to accidental spills or leaks of petroleum-containing hazardous materials will be implemented under Code of Federal Regulations (CFR) Title 40 SPCC Plan requirements and CCR Title 19 Business Plan requirements.

6.15.2.2.3 *Spill Prevention and Response Procedures*

A comprehensive SPCC Plan will provide spill prevention and response procedures and other information needed for potential impacts of a potential oil spill to be less than significant. The Table of Contents of the SPCC Plan is provided in Table 6.15-1. The Emergency Response Plan described in Section 6.17.2.2.3 will address spill prevention and response procedures for hazardous materials used onsite.

In the instance of a spill or release or threatened release involving a hazardous material, the event will be reported immediately to the facility emergency coordinator, who will immediately go to the scene of the emergency to assess the situation. The plant emergency response team and other key personnel on the emergency contact list in the Business Plan also will be notified. The emergency coordinator will determine if the spill, release or threatened release is reportable to regulatory agencies.

Any release or threatened release of hazardous material that may pose a significant or potentially significant hazard to human health and safety, the environment or property, will be immediately reported verbally to: San Diego County Fire Department (911), San Diego County Department of Health, Division of Environmental Health Services, and OES. Immediate reporting will occur as soon as possible following knowledge of such a release, without impeding necessary immediate controls or emergency measures. Immediate reporting will include at least the following information, in accordance with CCR Title 19, Section 2703:

- Name and telephone number of the reporter.
- Name and address of the facility.
- Time and type of incident (e.g., release, fire).
- Name and quantity of material(s) involved, to the extent known.
- Extent of injuries, if any.
- Possible hazards to human health or the environment outside of the facility.
- Whether or not agency assistance is required.

Certain types of releases in excess of reportable quantities specified in CFR Title 40, Sections 302.4 and 355 may require additional reporting to the National Response Center, the Regional Water Quality Control Board, or other agencies. The Project will comply with these reporting requirements.

Table 6.15-1 – Table of Contents of SPCC Plan

| SECTION | REQUIREMENT TITLE OR DESCRIPTION | REGULATORY CITATION |
|---------|---|---------------------|
| i | Management approval | 112.7 |
| ii | Additional facilities, procedures, methods or equipment | 112.7 |
| 1.1 | Conformance with 40 CFR 112 Requirements | 112.7(a)(1) |
| 1.2 | Deviations | 112.7(a)(2) |
| 1.3 | Facility description | 112.7(a)(3) |
| 1.4 | Type of oil | 112.7(a)(3)(i) |
| 1.5 | Discharge prevention measures for routine oil loading, unloading and transfers | 112.7(a)(3)(ii) |
| 1.6 | Discharge or drainage controls, equipment and procedures for the control of a discharge | 112.7(a)(3)(iii) |
| 2.0 | Countermeasures for discharge discovery, response and cleanup | 112.7(a)(3)(iv) |
| 2.1 | Methods of disposal | 112.7(a)(3)(v) |
| 2.1 | Contact lists and phone numbers | 112.7(a)(3)(vi) |
| 2.3 | Procedures for spill information reporting | 112.7(a)(4) |
| 2.4 | Procedures usable in an emergency | 112.7(a)(5) |
| 3.1 | Prediction of potential spill flow direction, rates and quantities | 112.7(b) |
| 3.2 | Containment and/or diversionary structures | 112.7(c) |
| 3.3 | Impracticability | 112.7(d) |

| SECTION | REQUIREMENT TITLE OR DESCRIPTION | REGULATORY CITATION |
|---------|--|---------------------|
| 4.1 | Inspections, tests and records | 112.7(e) |
| 4.2 | Training | 112.7(f)(1) |
| 4.3 | Designated Accountable Person | 112.7(f)(2) |
| 4.4 | Discharge Prevention Briefings | 112.7(f)(3) |
| 5.0 | Security | 112.7(g)(1) and (5) |
| 5.1 | Secure valves and pumps in closed/off positions | 112.7(g)(2) and (3) |
| 5.2 | Cap Out of service connections | 112.7(g)(4) |
| 6.0 | Facility tank car/ tank truck unloading | 112.7(h) |
| 7.0 | Field-constructed container repair, alteration, reconstruction, or change in service | 112.7(i) |
| 8.0 | Conformance with other requirements | 112.7(j) |
| 9.1 | Conformance with 40 CFR 112.7 and 112.8 | 112.8(a) |
| 9.2 | Requirements for valves at dike areas and inspection of drainage before discharging | 112.8(b)(1) and (2) |
| 9.3 | Catchment basins for drainage from undiked areas | 112.8(b)(3) |
| 9.4 | Diversionsary system for drainage from undiked areas | 112.8(b)(4) |
| 9.5 | Drainage treatment in more than one treatment unit | 112.8(b)(5) |
| 9.6 | Bulk storage container compatibility | 112.8(c)(1) |
| 9.7 | Bulk storage container secondary containment | 112.8(c)(2) |
| 9.8 | Control rainwater and inspect prior to release | 112.8(c)(3) |
| 9.9 | Buried metallic tanks | 112.8(c)(4) and (5) |
| 9.10 | Inspection and testing of above containers | 112.8(c)(6) |
| 9.11 | Control leakage from internal heating coils. | 112.8(c)(7) |
| 9.12 | Overfill prevention | 112.8(c)(8) |
| 9.13 | Effluent treatment facilities | 112.8(c)(9) |
| 9.14 | Promptly correct visible leakage | 112.8(c)(10) |
| 9.15 | Mobile storage containers | 112.8(c)(11) |
| 9.16 | Buried piping coating and corrosion protection; repair | 112.8(d)(1) |
| 9.17 | Cap out of service connections | 112.8(d)(2) |
| 9.18 | Piping supports | 112.8(d)(3) |
| 9.19 | Inspect aboveground valves, piping, etc. | 112.8(d)(4) |
| 9.20 | Protect aboveground piping from vehicles | 112.8(d)(5) |

Immediate reporting will be performed by the emergency coordinator or designee. The emergency coordinator or designee will determine the need for outside assistance and contact appropriate response organizations (e.g., medical providers, ambulance service, police), as necessary.

6.15.2.2.4 Fire and Explosion Risks

Flammable materials will be used for operations, including natural gas fuel. The Project gas pipeline will extend approximately 2.4 miles to the Site from San Diego Gas & Electric's (SDG&E's) existing gas main. The location, construction and operation of the gas pipeline are described in Section 2.0, Generation Facility Description, Design and Operation. The gas pipeline will not encroach on occupied structures. The gas pipeline will be operated in accordance with DOT safety regulations and other LORS, including marking of the pipeline route to minimize the potential for accidental damage. No impact related to hazardous materials is anticipated from the gas pipeline. Natural gas onsite will be in closed systems designed in accordance with all LORS. No hazardous material impact is anticipated to result from the operation of natural gas systems onsite.

Compressed gasses will be stored and used at the facility to support operations and maintenance including calibration gasses for emissions monitoring and carbon dioxide (CO₂) for fire suppression. Safety measures for compressed gasses will include:

- Compressed gasses will be controlled and periodically inventoried under the Hazardous Materials Business Plan prepared pursuant to 19 CCR.
- Compressed gasses will be stored in DOT-approved cylinders, secured to prevent upset and physical damage. Both DOT and Occupational Safety and Health Administration (OSHA) regulations include provisions for safe management of compressed gas cylinders.
- Incompatible gasses (e.g., flammable gasses and oxidizers) will be stored separately.

Use of compressed gasses at the facility in accordance with LORS designed for public and worker safety is not anticipated to result in any hazardous materials-related impact.

The power plant will be constructed and operated in compliance with a Fire Protection Plan to be approved by the Fire Marshal. A Fire Protection Plan is required by County ordinance because the Site is in a Wildland-Urban Interface fire area. Drawing L100 in Appendix 2-A shows the fuel modification zone that will be cleared around the Project in accordance with Fire Protection Plan requirements. Fuel modification will occur within 50 feet of the roads used for Site access (except where sensitive habitat occurs) and within 125 feet of Site structures and equipment.

6.15.2.2.5 Hazardous Materials Requiring Offsite Consequence Analysis

Aqueous ammonia (19.0 percent solution) for the Project will be stored in a 10,000-gallon aboveground storage tank. The presence of aqueous ammonia in this quantity requires an offsite consequence analysis, which is an evaluation of potential acute public health impacts from an accidental release. Additional details and supporting calculations associated with the offsite consequence analysis conceptual design and modeling are included in Appendix 6.15-A.

6.15.2.2.6 Offsite Consequence Analysis

The offsite consequence analysis was performed for the following two hypothetical accidental release scenarios: "worst case" and "alternative." An alternative scenario is included because of the low probability of the worst-case scenario. The alternative scenario is also unlikely to occur, but has a somewhat more realistic probability of occurrence than the worst case scenario. For both scenarios, distances to specified concentrations of ammonia were estimated. Where specified "level of concern" concentrations reach offsite, then potential public health impacts must be evaluated.

It should be noted that neither the "worst case" nor "alternative" accidental release scenarios are likely to occur during the life of the Project. The SCR system will include instrumentation that controls the injection rate of ammonia for control of nitrogen oxides (NO_x). The aqueous ammonia storage and handling facilities will be equipped with protective equipment such as continuous tank level monitors, temperature and pressure monitors and alarms, excess flow and emergency isolation valves, and a concrete containment structure surrounding the tank and piping. System maintenance and repairs will be conducted only by trained technicians. The aqueous ammonia system will be designed and operated to prevent accidental release.

Additional details regarding the definitions of the worst-case and alternative release scenarios, determination of emission rates, meteorological parameters associated with the dispersion modeling, and quantitative results of the analysis are provided in Appendix 6.15-A. An overview of the worst-case and alternative release scenarios and a summary of the results of the analysis are provided in the following sections.

6.15.2.2.7 Potential Release Scenarios

Potential accidental release scenarios due to aqueous ammonia handling and use include losses from a storage tank, losses during unloading of a tank truck to a storage tank, losses in the aqueous ammonia delivery system from the storage tank to the vaporizers, and losses of vaporized ammonia during delivery to the SCR catalyst beds. Because of safety shut-offs to these last two subsystems, potential ammonia release quantities from these delivery system components in the event of an upset condition are small compared to losses from the storage tank or from tank truck unloading. The proposed locations of the storage tank and unloading facility are shown in Drawing C100 in Appendix 2-A.

The worst case is the hypothetical instantaneous release of a full storage tank induced by some improbable catastrophic event. Under this improbable scenario, the storage tank is assumed to instantaneously release its full contents of aqueous ammonia into the tank's secondary containment area. The secondary containment design serves as a passive control system to limit the potential maximum surface area of aqueous ammonia.

The alternative release scenario involves the loss of aqueous ammonia during unloading of a tank truck. Under this scenario, a connector in the unloading piping is assumed to fail, allowing the aqueous ammonia to flow out freely through the 3-inch piping. In this scenario, the rate at which the aqueous ammonia escapes from the tank truck is influenced by the 3-inch size of the piping

used for unloading and an anticipated operator response time of 30 seconds. Assuming that a release is discovered and action is taken to mitigate the release within 30 seconds, the estimated volume of aqueous ammonia released under the alternative scenario is approximately 125 gallons. The volume of aqueous ammonia released is assumed to flow down the loading ramp over an area of approximately 84 square feet (21-feet-long by 4-feet-wide). Any additional flow would be directed to the secondary containment system associated with the aboveground storage tank. Consequently this alternative scenario primarily addresses a release to the concrete loading ramp. Additional details of these release scenarios are provided in Appendix 6.15-A. Modeling outputs are provided in Appendix 6.15-B.

6.15.2.2.8 Offsite Consequence Analysis Modeling Results

Potential offsite impacts of an unforeseen aqueous ammonia release are evaluated in terms of the ground-level concentrations. In the analysis of the offsite consequences of a hypothesized accidental release, a significant impact will not occur if the toxic or flammable endpoint (i.e., Emergency Response Planning Guideline Level 2 [ERPG-2] concentration) is less than the distance to the nearest public receptor.

Level-of-concern concentrations used to characterize potential public health impacts associated with the hypothetical release of aqueous ammonia include:

- ERPG-2: The ERPG-2 concentration for ammonia is 150 parts per million (ppm), averaged over 1 hour (AIHA, 2006). It is defined as the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.
- Short-Term Public Emergency Limit (STPEL): The STPEL is a concentration set by the National Research Council at 75 parts per million by volume (ppmv), averaged over 30 minutes. The California Energy Commission (CEC) uses this concentration as a guideline to assess potential acute health impacts due to ammonia exposures. Concentrations below 75 ppm for 30 minutes are believed to have no human health or environmental impacts and, therefore, are insignificant.

The results of the dispersion modeling for the worst-case and alternative release scenarios indicate that the ERPG-2 concentration of 150 ppm extends beyond the Project fence line in both scenarios. However, neither the ERPG-2 nor STPEL concentrations impact a residence or other public receptor in either the worst case or alternative scenario. Sensitive receptors and emergency response facilities are not located within the area potentially affected by these releases. Figures 6.15-2 and 6.15-3 depict the distances to the two level-of-concern concentrations for the worst-case and alternative scenarios, respectively.

6.15.2.2.9 Offsite Consequence Analysis Conclusions

The Project design features (Section 6.15.2.4) sufficiently reduce the likelihood and consequences of such releases such that no significant offsite consequences at receptors of public

health concern are anticipated under the worst-case or alternative release scenarios. As discussed in Section 6.17, Project workers will be trained to avoid and respond to accidental releases of hazardous materials, including ammonia. The combination of Project design and worker training are anticipated to further reduce the magnitude of a potential release to levels that are even lower than assumed for the purpose of this analysis. Even under the conservative assumptions utilized in this analysis, the maximum modeled concentrations of ammonia are below the ERPG-2 and STPEL concentrations of 150 and 75 ppm, respectively, at the nearest residence or other public receptors. Consequently, the potential impacts associated with the hypothetical accidental release scenarios are less than significant.

As discussed in Section 6.17, Worker Safety, workers at the Project will be trained to avoid and respond to accidental releases of hazardous materials, including ammonia. The Project design and worker training reduce the safety hazard from an accidental aqueous ammonia release to a less than significant level.

In light of these findings, the Project will be eligible for Cal-ARP Program 1 because it meets the following requirements:

- "The distance to a toxic endpoint or flammable endpoint for a worst-case release is less than the distance to any public receptor." The toxic endpoint (i.e., ERPG-2 concentration) is 150 ppmv, or 104 milligrams of ammonia per cubic meter of air (mg/m^3).
- "For the 5 years prior to the submission of an RMP, the process has not had an accidental release of a regulated substance where exposure to the substance, its reaction products, overpressure generated by an explosion involving the substance, or radiant heat generated by a fire involving the substance has led to any of the following offsite consequences:
 - Death,
 - Injury, or
 - Response or restoration activities for an exposure of an environmental receptor."
- "Emergency response procedures [will be] coordinated between the stationary source and local emergency planning and response organizations."

6.15.2.2.10 Site Security

The Project will include security plans for physical and cyber systems in accordance with the North American Electric Reliability Corporation's (NERC) Security Guidelines for the Electric Reliability Sector and Cyber Security Standards. The developed security plans will include the following categories:

- Vulnerability and Risk Assessment
- Threat Response Capability
- Emergency Management
- Continuity of Business Processes
- Communications

- Physical Security
- Information Technology/Cyber Security
- Employment Screening
- Protecting Potentially Sensitive Information.

6.15.2.2.11 Summary of Operations Impacts

As described in preceding sections, compliance with LORS for hazardous material handling and other safety and release prevention programs will be in place to limit the risk of a serious hazardous materials incident. With the safety and release prevention measures that will occur, the impacts of hazardous material use by the Project will be less than significant. Long-term or cumulative impacts will be avoided by cleaning up any accidental spills as soon as they occur.

6.15.2.3 Cumulative Impacts

Other projects that have been evaluated for potential cumulative impacts are listed in Table 6.1-1. There are no projects with an identifiable potential for cumulative impacts related to hazardous material. There are no other projects within a distance that could have a potential for cumulative impacts related to hazardous materials.

6.15.2.4 Project Design Features

The following are design and operational features that have been incorporated into the Project to avoid potentially significant environmental impacts:

- Hazardous material handling and storage for both construction and operations will occur in accordance with applicable LORS.
- Choice of aqueous ammonia rather than anhydrous to reduce consequences if there were an accidental release.
- Choice of 19.0 percent (by weight) aqueous ammonia concentration to further reduce potential hazard compared to using the usual commercial concentration of 29.4 percent (by weight).
- Secondary containment will be provided at the aqueous ammonia storage tank and the tank truck unloading facility to limiting the area of potential spreading and volatilization in the event of an accidental release. The secondary containment facilities will be constructed such that area of volatilization will be equal to or less than the area used for offsite consequence modeling (see Appendix 6.15-A).
- Construction contractors will be required to provide qualified personnel that are trained in their job duties including appropriate handling of hazardous materials to comply with all applicable LORS. During construction, an onsite safety supervisor will be designated to implement health and safety programs including hazardous materials spill prevention and safety programs.

- Construction contractors will be required to have or develop standard operating procedures for servicing and fueling construction equipment designed to prevent fire, explosion or release of fuel products.
- Hazardous material will be stored at designated locations designed for the purpose.
- Training and safety programs for workers will be implemented as described in Section 6.17.
- Process areas of the Site will be designed to contain surface drainage.
- Equipment oil reservoir levels will be checked frequently. If a level changes significantly, corrective action will be triggered immediately.
- Equipment oil reservoirs will have alarms and high- and low-level sensors. The sensors, alarms and associated instrumentation are calibrated regularly.
- Small pumps and other lubricated equipment will have pans to contain drips from gaskets or seals. Excessive leaks will be promptly corrected by plant maintenance programs.
- The Project will implement a security plan compliant with the NERC's Security Guidelines for the Electricity Sector and Cyber Security Standards.
- The Plant will be constructed and operated under a Fire Protection Plan approved by the Fire Marshal.

The conceptual design for the aqueous ammonia storage and tank truck off-loading area is provided in Appendix 6.15-C. The aqueous ammonia tank and pump skid will be in a common secondary containment area designed to limit the area of a maximum spill to 1,000 square feet or less. Aqueous ammonia will be trucked to the Site in a tanker truck with a container capacity of not more than 8,000 gallons, and the aqueous ammonia will be pumped from the transport tanker into the onsite storage tank. The transport tanker will be parked on the ammonia unloading spill containment area to the side of the ammonia storage tank, and the ammonia unloading spill containment area will be sloped to a center drain that flows to the ammonia tank secondary containment area. A minimum of two layers of high density polyethylene (HDPE) balls will be provided in the ammonia tank secondary containment area to topcoat a potential spill and minimize the surface area of aqueous ammonia exposed for volatilization. Ammonia detectors will be located just above grade at the two longer sides of the aqueous ammonia tank spill containment area. The ammonia detectors will be equipped with an alarm system that provides local visual and audible annunciation, and sends a remote alarm to the power plant's main control room to alert the plant operators.

Aqueous ammonia piping between the ammonia unloading spill containment area and the ammonia tank, between the ammonia tank and the pump skid, and between the pump skid and the ammonia vaporizer skid will be steel with welded joints.

The ammonia tank capacity has been designed such that deliveries of ammonia will be infrequent. As noted in Table 2.8-1, ammonia deliveries are expected to occur bi-monthly. Ammonia deliveries will occur using trucks that have a turning radius smaller than the minimum

curve radius on SR 76 between I-15 and the power plant (See Section 6.11, Traffic and Transportation for evaluation of SR 76 turn radius limitations). The following additional Project design measures will be implemented to assure safe transport of aqueous ammonia to the Site:

- Aqueous ammonia loads will be escorted by a pilot car between Pankey Road (Figure 6.15-1) and the Site.
- Aqueous ammonia will be purchased with a contract condition that delivery to the Site occur outside of the hours of 6 am to 10 am and 2 pm to 6 pm. This will avoid peak traffic hours and school bus route hours along SR 76.

6.15.3 Mitigation Measures

Based on the above analysis of impacts and the design and operational features that have been incorporated into the Project, no mitigation measures are required.

6.15.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated from the Project.

6.15.5 Laws, Ordinances, Regulations and Standards

A summary of LORS related to hazardous material handling is provided in Table 6.15-2. Concerning aqueous ammonia, the Project will be in compliance with applicable LORS during construction and operation because the following will be accomplished prior to storage or use of aqueous ammonia for the Project:

- Workers handling aqueous ammonia for the Project will be thoroughly trained.
- The RMP will be prepared.
- The RMP will be approved by the CUPA.
- Emergency response procedures will be coordinated between facility personnel and local emergency planning and response organizations.

The remainder of this page is intentionally blank.

Table 6.15-2 – LORS for Hazardous Materials Handling

| JURIS-DICTION | AUTHORITY | AGENCY ¹ | REQUIREMENTS | COMPLIANCE | AFC SECTIONS AND PAGES |
|---------------|---|--|--|---|--|
| Federal | Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as Superfund), 42 USC §9601 et seq.; 40 CFR Part 302, as amended by Superfund Amendments and Reauthorization Act (SARA); 40 CFR Part 302, (SARA Title III); 42 USC §11001 et seq.; 40 CFR Parts 350, 355, 370. | EPA Region 9; San Diego County Environmental Health Department | SARA Title III – reporting requirements for storage, handling, or production of significant quantities of hazardous materials. | The Project will comply with release notification in accordance with existing LORS. Reporting requirements for storage and handling of hazardous materials will be satisfied through a Hazardous Materials Business Plan. | 6.15, 6.15.2.1, 6.15.2.2 Pages 6.15-1 to 6.15-19, 6.15-4 to 6.15-13 |
| | 29 USC 651; 29 CFR §1910 et seq., §1926 et seq. | Cal-OSHA. | Meet requirements for hazardous materials communications and emergency response. | Employees will be trained in hazardous materials communication and emergency response. | 6.15.2.1, 6.15.2.2 Pages 6.15-4 to 6.15-13 |
| | CAA, Section 112(r). | EPA Region 9; California Office of Emergency Services; San Diego County Environmental Health Department. | Preparation of RMP for hazardous materials stored onsite. | Project will not trigger federal RMP requirements, since aqueous ammonia will be only 19 percent concentration. | 6.15, 6.15.2 Pages 6.15-1 to 6.15-19, 6.15-3 to 6.15-13 |
| State | 8 CCR §339, 3200 et seq., 5139 et seq., 5160 et seq. | Cal-OSHA. | Address control of hazardous substances. | Project will meet or exceed these standards in handling hazardous materials. | 6.15.2.1, 6.15.2.2 Pages 6.15-4 to 6.15-13 |

¹ Pursuant to 20 CCR Chapter 5 Appendix B Section (i)(1)(B): Each agency with jurisdiction to issue applicable permits and approvals or to enforce identified LORS and adopted local, regional and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the CEC to certify sites and related facilities.

| JURIS-DICTION | AUTHORITY | AGENCY ¹ | REQUIREMENTS | COMPLIANCE | AFC SECTIONS AND PAGES |
|-------------------|--|--|---|---|--|
| State (Cont'd) | California Health & Safety Code §25500-25543.3; 19 CCR §2720-2735. | San Diego County Department of Environmental Health. | Prepare Hazardous Materials Business Plan. | The construction contractor will submit a Hazardous Materials Business Plan for construction in accordance with these requirements. Orange Grove Energy will submit a Hazardous Materials Business Plan for operations in accordance with these requirements. | 6.15.2.1, 6.15.2.2 Pages 6.15-4 to 6.15-13 |
| | Cal-ARP, California Health & Safety Code §25531 et seq.; CCR, Title 19, Chapter 4.5. | San Diego County Department of Environmental Health. | Risk Management Plan. | The Project will prepare an RMP in accordance with Cal-ARP requirements before aqueous ammonia is delivered to the Site. | 6.15, 6.15.1, 6.15.2.1, 6.15.2.2, 6.15.5 Pages 6.15-1 to 6.15-3, 6.15-4 to 6.15-13, 6.15-15 to 6.15-18 |
| Local | San Diego County Code of Regulatory Ordinances, Title 6, Division 8, Chapter 11. | San Diego County Department of Environmental Health. | Requirements for hazardous materials inventory and response plan. | The construction contractor will submit a Hazardous Materials Business Plan for construction in accordance with these requirements. Orange Grove Energy will submit a Hazardous Materials Business Plan for operations in accordance with these requirements. | 6.15.2.1, 6.15.2.2 Pages 6.15-4 to 6.15-13 |
| Industry | None Applicable | None Applicable | None Applicable | None Applicable | None Applicable |

The RMP will be prepared and approved prior to arrival of aqueous ammonia onsite.

A hazardous materials permit will be required. A schedule for obtaining the hazardous materials permit is provided in Section 2.15. To date, no steps have been taken toward obtaining this permit. It is not required until hazardous materials are stored onsite. Required information will be provided to the County Department of Environmental Health through submittal of the Hazardous Materials Business Plans for construction and operation.

Table 6.15-3 provides contact information for those agencies having permit approval or enforcement authority.

Table 6.15-3 – Agency Contact Information

| AGENCY | AUTHORITY |
|---|---|
| Cal-OSHA - Division of Occupational Safety & Health 2424 Arden Way, Suite 410 Sacramento, California 95825 D. Cunningham (916) 263-2800 | Compliance with Worker Safety Training Requirements |
| San Diego County Department of Environmental Health PO Box 129261, San Diego, California 92112 M. McCabe, Environmental Health Specialist III (619) 338-2453 | RMP Approval |
| San Diego County Department of Environmental Health PO Box 129261, San Diego, California 92112 J. Swanson, Environmental Health Specialist II (619) 338-2232 | Hazardous Materials Business Plan |

6.15.6 References

California Department of Food and Agriculture. Fertilizing Material Tonnage Report. 1996, 1997, 1998, 1999, 2000.

California Office of Emergency Services. Final California Accidental Release Prevention (Cal-ARP) Program Regulations. California Code of Regulations (CCR) Title 19, Division 2, Chapter 4.5. November 16, 1998.

EPA. *Risk Management Program Guidance in Offsite Consequence Analysis*. April 15, 1999.

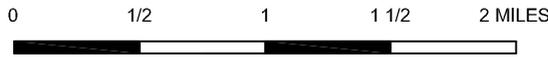
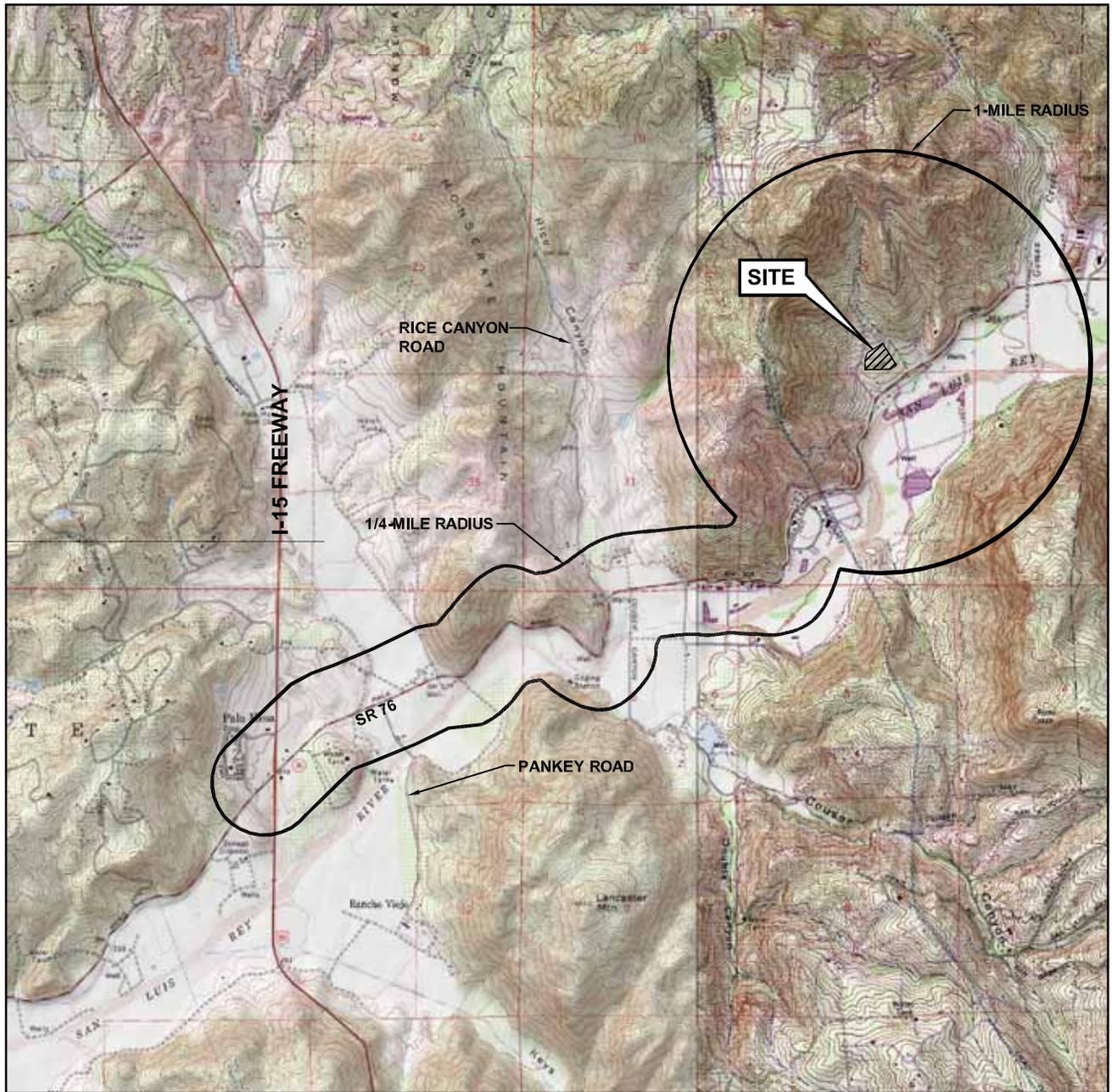
General Electric Corporation (GE). Lubricating Oil Recommendations for Gas Turbines With Bearing Ambients Above 500°F (260°C), GE Power Systems, GEK32568E. May 1999.

National Institute of Occupational Safety and Health (NIOSH). *NIOSH Pocket Guide to Chemical Hazards*. DHHS (NIOSH) Publication No. 97-140. U.S. Government Printing Office. Washington, D.C. 1997.

Perry, R.H. and D.W. Green (eds). *Perry's Chemical Engineers' Handbook*. 7th Edition. McGraw Hill: New York. 1997.

Sax, I. and N. Irving. *Dangerous Properties of Industrial Materials*. (3rd Edition). Van Nostrand Reinhold Company: New York. August 1968.

Wray, T.K. "HazMat Chemist: Ammonia." *HazMat World*, p. 86. November 1991.B



SCALE 1:48,000



NOTE:

No schools, hospitals, day care facilities, emergency response facilities, or long term health care facilities (i.e. sensitive receptors) are shown on this map because there are none present and none proposed within one mile of the site, or within one-quarter mile of SR 76.

SOURCE:

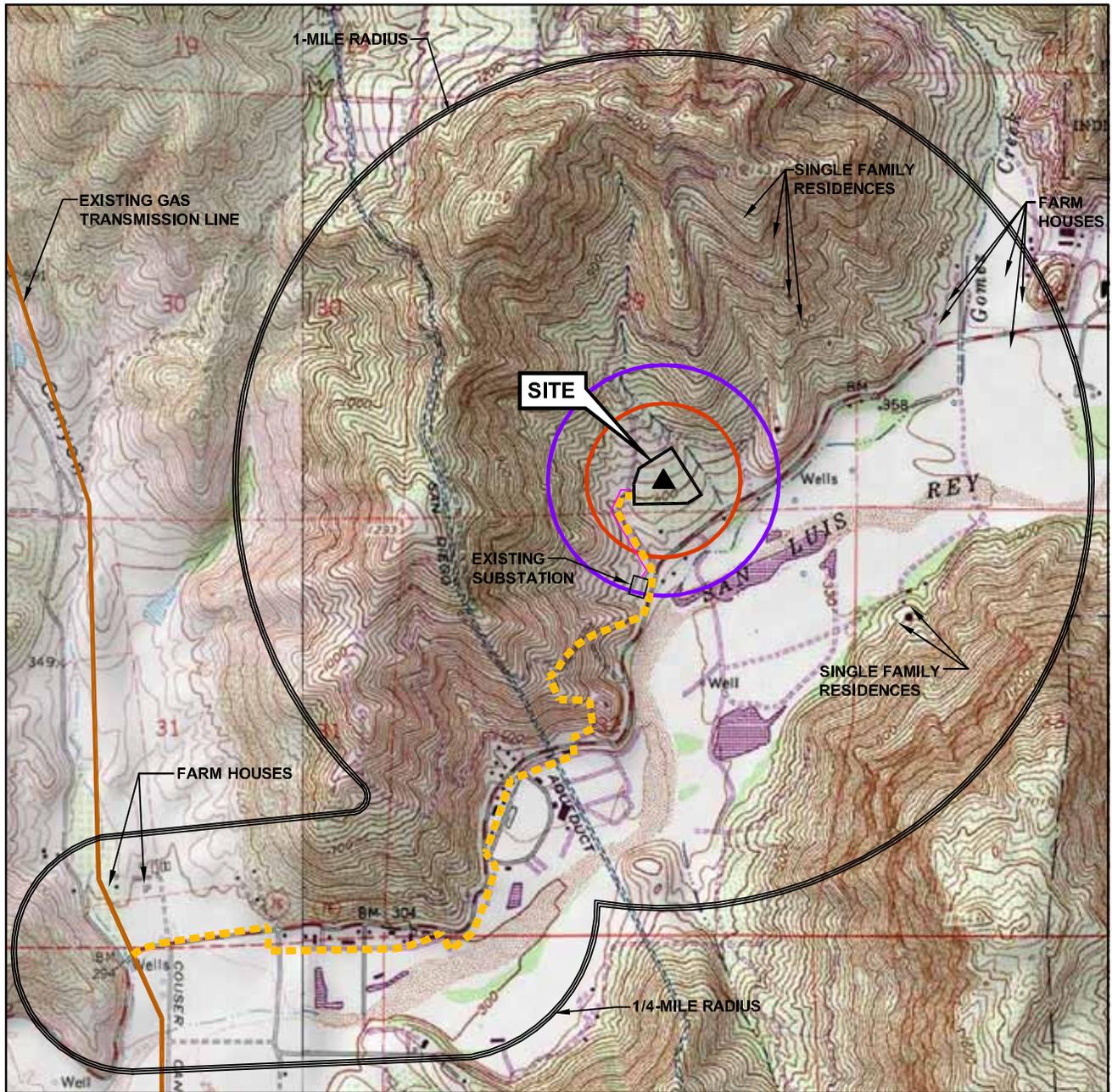
United States Geological Survey
7.5 Minute Topographic Map, 2000:
Pala, Bonsall, Temecula,
and Pechanga Quadrangles



PROJECT: 125158
FACILITY:
ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

SENSITIVE RECEPTORS NEAR THE SITE AND NEAR SR-76

FIGURE 6.15-1



SCALE 1:24,000



LEGEND

- Proposed Transmission Line
- - - Gas Pipeline

- ▲ Location of Ammonia Storage Tank
- STPEL - 75 ppm
- ERPG-2 - 150 ppm

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map, 2000:
Pala, Bonsall, Temecula,
and Pechanga Quadrangles

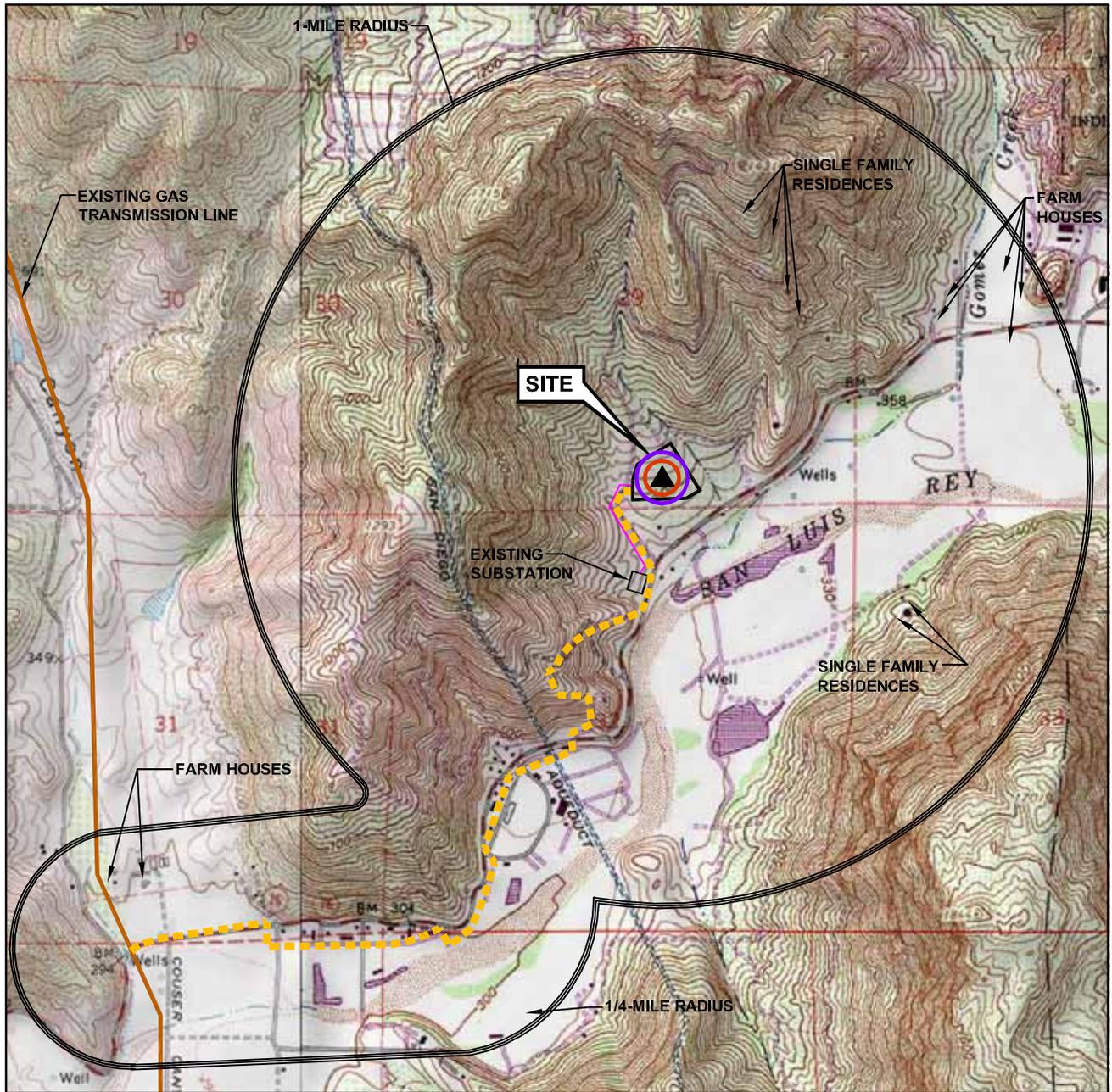


PROJECT: 125158
FACILITY:
ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

WORST-CASE ACCIDENTAL AQUEOUS AMMONIA RELEASE SCENARIO

FIGURE 6.15-2

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SCALE 1:24,000



LEGEND

- Proposed Transmission Line
- Gas Pipeline

- ▲ Location of Ammonia Storage Tank
- STPEL - 75 ppm
- ERPG-2 - 150 ppm

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map, 2000:
Pala, Bonsall, Temecula,
and Pechanga Quadrangles



PROJECT: 125158
FACILITY:
ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

ALTERNATE ACCIDENTAL AQUEOUS AMMONIA RELEASE SCENARIO

FIGURE 6.15-3