7.12 HAZARDOUS MATERIALS HANDLING

7.12 HAZARDOUS MATERIALS HANDLING

This section describes the hazardous materials to be used in conjunction with the construction and operation of the proposed San Gabriel Generating Station (SGGS). The discussion includes information on the applicable laws, ordinances, regulations, and standards (LORS) and includes an evaluation of potential public health impacts resulting from the storage and handling of hazardous materials. A list of known chemicals associated with the project is provided, as well as a description of the storage facilities and handling equipment for hazardous materials that have been designed to ensure that potential impacts will be below designated thresholds of significance, even in the unlikely event of a worst-case accidental release of a hazardous material.

To minimize the risks and offsite consequences from hazardous materials, a federal program was established in 1990 as described in Section 112 (r) of the Clean Air Act. The California Office of Emergency Services established the California Accidental Release Prevention (Cal/ARP) Program to prevent the accidental releases of regulated substances and develop plans for minimizing the impacts of such releases should they occur. The Cal/ARP Program specifies regulated substances, oversees the federal and state requirements, and determines the requirements for the preparation of a Risk Management Plan (RMP) and offsite consequence analysis for accidental releases of hazardous chemicals.

The Cal/ARP Program defines three program levels with differing requirements, depending upon the complexity, accident history, and potential impact of releases of regulated substances. The program requires that the owner or operator of an affected facility coordinate closely with the local administering agency to determine the appropriate level of documentation required for an RMP.

The construction and operation of the SGGS requires a number of hazardous materials to be handled and stored on the proposed project site. Only aqueous ammonia will be present in amounts greater than the State and Federal Threshold Quantity. Thorough analysis of the impacts of an accidental release of aqueous ammonia is evaluated by means of an offsite consequence analysis (OCA). To fulfill the Program 1 requirements, the following actions are required (U.S. EPA, 1999):

- Analyze the worst-case release scenario and include it in the RMP.
- Document that the nearest public receptor is beyond the distance to a toxic or flammable endpoint.
- Document, and submit with the RMP, information related to any hazardous material accidents on the affected site in the past 5 years.
- Ensure that response actions have been coordinated with local emergency planning and response agencies.
- Certify in the RMP that "no additional measures are necessary to prevent offsite impacts from accidental releases."

If the facility triggers a Program 2 or Program 3 RMP, additional actions will be required, such as:

- Describe the site's accidental release prevention program and chemical-specific prevention steps. (Ensure that response actions have been coordinated with local emergency planning and response agencies.)
- Develop and describe the facility's prevention program, including the safety program, facility hazard review program, operating procedures, training program, maintenance program, compliance, and facility incident investigation program.

- Describe the site's emergency response program.

Beneficial design aspects of the proposed project that will minimize impacts below a level of significance include the following:

- Spill containment walls that surround the aqueous ammonia storage tank.
- Spill containment for the tanker truck unloading area.

7.12.1 Affected Environment

The proposed project will be located approximately one mile east of I-15 and 1.5 miles north of I-10. The project will be constructed adjacent to the Etiwanda Generating Station (EGS), an existing power plant owned and operated by Reliant Energy. The site is bordered by Etiwanda Avenue to the east, an existing and unmanned Southern California Edison (SCE) switchyard and vacant SCE-owned land to the south, undeveloped SCE owned land to the west, a parcel to the southwest owned by the Inland Empire Utilities Agency, and Burlington Northern Santa Fe Railroad tracks to the north. The closest public receptor is a Big Lots distribution center located about 0.33 mile (1,760 feet) south of the proposed project site. The location of the proposed SGGS is shown in Figure 2.2-1.

Given the site's urban location, a number of sensitive receptors (schools, hospitals, daycare facilities, or long-term health care facilities) are located within a 3-mile radius of the SGGS, which is the study area for this hazardous materials handling analysis. Table 7.12-1 lists each of these sensitive receptors and their distance and direction from the proposed project site. The nearest sensitive receptor is a residence situated approximately 0.4 mile northeast of the plant site. The proposed project site will not be located within 1,000 feet of any sensitive receptor, including residential areas, schools, general acute care hospitals, long-term health care facilities, and child daycare facilities.

Table 7.12-1
Sensitive Receptors within a 3-mile Radius

Receptor Name or Type	Distance from Project (miles)	Direction from Project Site
Big Lots Distribution Center (warehouse)	0.33	S
Pacific Coast Recycling LLC	0.37	NE
Bernell Hydraulics Inc	0.38	NE
Dave Johnson Bail Bonds	0.38	E
Inland Co	0.38	E
Inland Empire – Utilities Agency (Water Reclamation Facility Regional Plant #4)	0.38	SE
Jesus W. Garcia	0.4	NE
All State Paper and Metal Co	0.41	NE
Etiwanda-Whittram-Pecan 01	0.43	NE
Aguilar Trucking Inc	0.43	E
Meeder Equipment Co	0.46	SW
Tole House Cafe	0.46	NE

Table 7.12-1 Sensitive Receptors within a 3-mile Radius (Continued)		
Receptor Name or Type	**Distance from Project (miles)**	**Direction from Project Site**
Etiwanda-Whittram-Pecan 02	0.48	NE
Etiwanda-Whittram-Pecan 03	0.48	NE
Etiwanda-Whittram-Pecan 04	0.49	NE
Bail Bonds Center/Information/Trinity Bail Bonds	0.49	NE
CMC Fontana Steel	0.50	N
Etiwanda-Whittram-Pecan 05	0.54	NE
Etiwanda-Whittram-Pecan 06	0.54	NE
Air Liquide America Corp/Cameron Welding Supply/ Coastal Carbonic	0.56	N
Tamco/Olympic Mill Service	0.56	N
Etiwanda-Whittram-Pecan 07	0.57	NE
Ameron Pipe Products	0.57	N
West Valley Detention Center	0.58	S
Etiwanda-Whittram-Pecan 08	0.59	NE
Etiwanda-Whittram-Pecan 09	0.59	NE
Etiwanda-Whittram-Pecan 10	0.59	NE
EMG Logistics	0.61	E
Parallel Products	0.66	N
San Bernardino County Probation	0.66	S
Nong Shim Foods Inc.	0.68	W
West Valley Detention Center	0.70	S
Wallner Tooling Expac Inc.	0.71	W
Victoria Wood Apartment	0.72	NNE
West Valley Recovery Center	0.86	E
Adults Sports Park	1.00	NW
The Epicenter	1.15	NW
Allergy and Asthma Center-Inland	1.25	N
Marsha’s Manor	1.53	NW
Future residence home 01	1.55	NE
(west side apartment 01)	1.56	W
Empire Lake Golf Course	1.60	W

Table 7.12-1
Sensitive Receptors within a 3-mile Radius (Continued)

Receptor Name or Type	Distance from Project (miles)	Direction from Project Site
Montessori Child Development Center	1.72	NE
Foothill Family Medical Clinic	1.76	NE
Fibrow Family Daycare	1.76	N
Water of Life Preschool	1.76	N
Rancho San Antonio Medical Center	1.87	NW
Urgent Care at Rancho San Antonio	1.87	NW
West Heritage Elementary	1.90	NE
Mountain View Park	1.91	NW
Almond Elementary School	2.00	NE
Milliken Park	2.00	NW
Valiant Medical Group Inc.	2.10	NW
Angels Medical Center	2.16	NW
Rancho Specialty Hospital	2.16	NW
YMCA – Mountain View Dr.	2.16	NW
Kaiser Permanente	2.17	W
Kaiser Permanente Medical Care Program: Emergency-Fontana Medical Center	2.17	W
Grapeland Elementary School	2.19	N
West Greenway Park	2.20	NW
Inland Empire Academy of Arts	2.21	W
Rebekah’s Childcare	2.21	NE
Park 2	2.22	NE
Kaiser Park	2.30	SE
Children’s World Learning Centers: Fontana	2.30	NE
Coyote Canyon School Site/Coyote Canyon Elementary School	2.31	NW
Dove Child Development Center	2.31	W
Tutor Time Child Care-Learning Centers	2.31	NW
Little Blessings	2.33	NE
California Foothills Med Associates	2.35	NW
Kinder Care Learning Center	2.35	N

Table 7.12-1 Sensitive Receptors within a 3-mile Radius (Continued)		
Receptor Name or Type	**Distance from Project (miles)**	**Direction from Project Site**
YMCA – Elm Ave.	2.35	NW
Ellena Park	2.40	NW
Chris's Daycare	2.40	N
YMCA – West End	2.40	W
American Nursing Informatics Association	2.41	NW
Day Creek Intermediate School	2.42	N
Sentinel Health and Medical	2.42	W
Park 1	2.44	NE
Baldy View Regional School	2.45	W
Coyote Canyon Park	2.46	NW
Etiwanda Intermediate	2.47	N
Jalapouri Fairy	2.47	N
YMCA – Constitution Way	2.47	NE
East Heritage Elementary School	2.48	NE
Windrows Elementary School	2.50	N
North Heritage Park	2.50	NE
Windrows Park	2.51	N
Long Gina	2.51	NW
Spruce Adventure Park	2.52	NW
Primecare of Inland Valley	2.53	W
Future residence home 03	2.53	NE
La Petite Academy	2.55	N
Haven Family Medical	2.57	W
Lamb's Light Home Health Services	2.57	W
Inland Cosmetic Surgery Med	2.58	W
Rancho Cucamonga Central Park	2.59	NW
Vintage Park	2.59	NW
Toddler Time Day Care	2.61	NW
Kinder Care Learning Center	2.64	NW
Redwood Elementary School	2.65	E
Palmer D & I	2.65	NW

Table 7.12-1
Sensitive Receptors within a 3-mile Radius (Continued)

Receptor Name or Type	Distance from Project (miles)	Direction from Project Site
Carleton P. Lightfoot Elementary School	2.68	N
McDermott Park	2.69	NE
Circle Park	2.72	NE
Future residence home 02	2.72	E
Etiwanda High School	2.75	N
West Point Medical Center	2.77	NE
Central Elementary	2.78	NW
Ruth Musser Middle School	2.78	NW
YMCA – Terra Vista Pkwy	2.79	NW
Rancho Cucamonga High School	2.80	N
Rancho Cucamonga Multi-Specs	2.83	NW
Ontario Motor Speedway Park	2.90	SW
Cross and Crown Lutheran Church School and Children's Center	2.90	N
IADC RockCreek Inc.	2.91	SW
Tutor Time Child Care Center	2.96	NE
Cougar Cub's Day Care Ctr.	2.98	N
Live Oak Elementary School	2.99	E
The Ontario Center School	3.00	SW
YMCA – N. Center Ave.	3.00	SW

The proposed project site is not within a designated floodplain. Therefore, the ammonia storage facility does not need to be designed to accommodate possible flooding.

The SGGS site is located in Seismic Risk Zone 4. All project structures will be designed in conformance with the 2001 California Building Standards Code criteria for Seismic Zone 4 to ensure safety for operating personnel and adequate protection against structural and equipment damage.

7.12.2 Environmental Consequences

The criteria used to determine the significance of potential impacts from hazardous materials used at the SGGS were based on the Environmental Checklist Form of the California Environmental Quality Act (CEQA) Guidelines and on standards and thresholds adopted by the relevant agencies involved with this Application for Certification (AFC). Under CEQA Guidelines, an impact may be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5, and as a result, would create a significant hazard to the public or the environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Operational procedures for the safe transport, use, and disposal of hazardous materials will avoid or minimize significant impacts from potential accidental releases. Potential impacts from hypothetical worst-case accidental releases of ammonia described in Section 7.12.2.2 have been demonstrated to be below a level of significance due to the mitigation measures incorporated in the proposed design of the facility.

An accidental release can only occur if hazardous materials are handled improperly, or if a catastrophic event occurs. Although the probability of such events occurring is extremely low, passive design features have been included in the proposed project design to minimize potential impacts in the event of a release. Hence, additional mitigation measures are not required (see Section 7.12.4, Mitigation Measures).

An offsite consequence analysis must be performed to evaluate potential offsite impacts in terms of the predicted maximum ground-level concentration of each hazardous material that qualifies as a state-regulated substance under the Cal/ARP Program, or a federal-regulated substance under Section 112(r) of the Clean Air Act. For the proposed project, aqueous ammonia is the only substance that will be stored and used on site in sufficient quantity to qualify as a state-regulated substance. Thus, an offsite consequence analysis will be required for aqueous ammonia. The model simulations of the atmospheric dispersion of ammonia during the worst-case release scenarios will partially determine which RMP Program level will be required.

In the analysis of potential offsite consequences of the hypothesized worst-case accidental ammonia release, a significant impact would occur if a concentration of ammonia were predicted to equal or exceed the toxic endpoint at the distance of the nearest public receptor. The toxic endpoint is designated by the U.S. EPA in 40 CFR Part 68, Appendix A, as 200 parts per million by volume (ppmv). This concentration was formerly equivalent to the Emergency Response Planning Guideline Level 2 (ERPG-2) concentration, although the current ERPG-2 concentration limit has since been reduced to 150 ppmv.

The CEC routinely uses a more stringent significance criterion for ammonia, specifically, a concentration equal to or greater than 75 ppmv averaged over 30 minutes, which corresponds to the Short-Term Public Emergency Limit (STPEL) established by the National Research Council.

San Bernardino County Fire Department, Hazmat Division is the designated Certified Unified Program Agency (CUPA) for the proposed project vicinity and will be responsible for approving the RMP for the aqueous ammonia facilities of the proposed project.

7.12.2.1 Hazardous Materials Introduced by Proposed Project Construction

Hazardous materials used during the construction of the SGGS would be limited to small volumes of flushing and cleaning fluids (phosphate or nitrate solutions), cleaning solvents, paint wastes, antifreeze, and pesticides. The construction contractor would be considered the generator of hazardous construction waste and would be responsible for proper handling of such wastes in accordance with all applicable federal, state, and local laws and regulations, including licensing, personnel training, waste accumulation limits and times, reporting, and recordkeeping. Any hazardous wastes generated during construction would be collected in hazardous waste containers near the point of generation and moved daily to the contractor's 90-day hazardous waste storage area located on the site. The accumulated waste would be subsequently delivered to an authorized waste management facility.

Material Safety Data Sheets for each onsite chemical would be kept at the SGGS site and construction employees would be made aware of their location and content.

The most probable accidents involving hazardous materials during construction might occur from small-scale spills during cleaning or use of other materials in the storage areas or during refueling of machinery. Such spills would be immediately cleaned up and materials containing hazardous substances would be properly disposed of. No additional measures beyond those described in this section are needed to reduce potential impacts during construction to a less-than-significant level.

7.12.2.2 Hazardous Materials Introduced by Proposed Project Operation

A number of hazardous materials would be stored and used on the site during the operation of the combined-cycle gas turbines and Selective Catalyst Reduction (SCR) systems at SGGS. Table 7.12-2 lists the hazardous materials that would be used or stored on site as a result of the proposed project. Information provided in this table for each material includes the maximum quantity stored on site, Chemical Abstract Service (CAS) number, anticipated usage quantity, location, nature of the associated hazard, and state/federal threshold quantities. Figure 7.12-1 shows the locations where hazardous materials would be stored on the proposed project site.

Emergency response policies and procedures would be outlined in a Business Plan/Contingency Plan that would be prepared prior to commencement of proposed project operations. This plan would describe the necessary actions to be taken by facility personnel in the event of a hazardous material release to the air, soil, or surface waters in the plant vicinity. These procedures would include a notification checklist with contact information for SGGS qualified individuals, emergency response agencies, regulatory agencies, police, fire, hospital, and ambulance services (40 CFR 355).

Waste lubricating materials would be periodically generated during the operation and maintenance of the generating units. These materials would be collected and stored in appropriately designed and labeled storage containers. Waste lubricants would be recycled by an approved contractor in compliance with applicable regulations.

Combustion exhaust catalysts would be used as part of the air quality control systems associated with the new generating units. These catalyst materials, which contain vanadium and other toxic materials, are expected to last approximately three to five years and will be replaced periodically. The manufacturer would recycle spent catalysts, if possible. If necessary, these materials would be disposed of in an appropriate manner at an approved Class I landfill.

Solvents may be used for parts cleaning and other maintenance activities. The use of solvents on site would be minimized. All solvents would be stored in appropriate containers, within labeled areas with secondary containment. Spent solvents would be recycled, if practical, or would be disposed of in an appropriate manner.

Table 7.12-2
Anticipated Hazardous Materials Used and Stored During Operation
(Page 1 of 2)

Material	CAS Number	Location/ Application	Hazardous Characteristics [1]	Maximum Quantity on Site[2]	Regulatory Thresholds (lbs)		
					Federal RQ	Federal TPQ	Federal TQ
Aqueous Ammonia 29.4 wt%	7664-41-7	NO_X emissions Control, HRSG Feed Chemical Addition	Acute, chronic, fire, pressure	15,000 gals	100	500	20,000
Oxygen Scavenger		HRSG & Aux Boiler Feed Chemical Addition	Acute, chronic	500 gals	—	—	—
Mineral Insulating Oil	None	Electrical transformers	Acute, chronic, fire	55,000 gal[3]	—	—	—
Lubricating/Hydraulic Oil	None	Mechanical equipment	Acute, chronic, fire	25,000 gal[3]	—	—	—
Propylene Glycol / Water Mixture	57-55-6	Antifreeze for closed cooling water system	Acute, chronic, fire	1,500 gal	—	—	—
Sodium Hydroxide 25%	1310-73-2	Water Treatment	Acute, chronic	400 gals	—	—	—
Permatreat PC-191 Antiscalant		Water Treatment	Acute, chronic	400 gals	—	—	—
Polyelectrolite (Nalco 8103)		Water Treatment	Acute, chronic	200 gals	—	—	—
Sodium Hypochlorite	10022-70-5	Water Treatment	Acute, chronic	500 gals	—	—	—
Sulfuric Acid 66 Be	7664-93-9	Water Treatment	Acute, chronic, reactive	550 gals	1,000	1,000	
Bisulfate (Nalco 7408)		Water Treatment	Acute, chronic	400 gals	—	—	—
Trisodium Phosphate	7601-54-9	Aux Boiler feedwater scale control	Acute, chronic	100 gals	—	—	—
Hydrochloric Acid	7647-01-0	HRSG chemical cleaning	Acute, chronic	Temporary	—	—	—

Table 7.12-2
Anticipated Hazardous Materials Used and Stored During Operation
(Page 2 of 2)

Material	CAS Number	Location/ Application	Hazardous Characteristics [1]	Maximum Quantity on Site[2]	Regulatory Thresholds (lbs)		
					Federal RQ	Federal TPQ	Federal TQ
Ammonium Biflouride		HRSG chemical cleaning	Acute, chronic	Temporary	—	—	—
Citric Acid	77-92-9	HRSG chemical cleaning	Acute, chronic	Temporary	—	—	—
EDTA Chelant		HRSG chemical Cleaning		Temporary	—	—	—
Sodium Nitrite	7632-00-0	HRSG chemical cleaning	Acute	Temporary	—	—	—
Carbon Dioxide (g)	124-38-9	Generator purging	Acute, fire, pressure	25,200 scf	—	—	—
Carbon Dioxide (l)	124-38-9	Fire suppression	Acute, fire, pressure	24,000 lb	—	—	—
Hydrogen	1333-74-0	Generator cooling	Acute, fire, pressure reactive	24,000 scf	—	—	—
Nitrogen	7727-37-9	Blanketing	Pressure	200 lb	—	—	—
Natural Gas	None	Gas turbine generator	Acute, fire, pressure	1,300 lbs[3]	—	—	—
CEMS Gases CO, O_2, and NO_X		CEMS system calibration	Pressure	10 bottles (1,500 in^3 each)	—	—	—

CAS Number = Chemical Abstract Services
Federal RQ = Reportable Quantity
Federal TPQ = Threshold Planning Quantity
Federal TQ = Threshold Quantity

lbs = pounds
scf = standard cubic feet
US gal = US gallons
— = Not Applicable

Notes:

1 Hazard categories are defined by 40 CFR 370.2. Health hazards include acute (immediate) and chronic (delayed). Physical categories include fires, sudden release of pressure, and reactive.
2 All quantities are approximate.
3 In the equipment and pipelines.
4 Sulfuric acid fails the evaluation pursuant to Section 25532(g)(2) of the HSC as it does not meet the following conditions: 1) if concentrated with greater than 100 pounds of sulfur trioxide or the acid meet the definition of oleum; or 2) if in a container with flammable hydrocarbons.

Curbs, berms, and concrete pits would be used where accidental releases of hazardous and acutely hazardous materials could occur. All containment areas would be constructed in accordance with applicable laws, ordinances, regulations, and standards. Containment areas would be drained to appropriate collection areas or neutralization tanks for recycling or offsite disposal. Traffic barriers would protect piping and tanks from potential traffic hazards.

To minimize impacts from accidental releases, workers would be trained in methods for safe handling of hazardous materials, use of response equipment, procedures for mitigation of a release, and coordination with local emergency response organizations. More importantly, to avoid or minimize impacts from the accidental releases of hazardous materials, nonhazardous or less hazardous materials would be used where possible, or engineering controls would be implemented. For example, aqueous ammonia was selected for the SCR emission control system over anhydrous ammonia because it is less hazardous in the event of an onsite release.

The most probable accidents involving hazardous materials may include small-scale spills of waste oil or other chemicals from product or satellite storage areas. To avoid potential impacts, all spills would be cleaned up immediately.

The quantities of individual hazardous and acutely hazardous chemicals that trigger federal evaluation of potential offsite consequences for an accidental release are listed in 40 CFR 68.115. The corresponding state thresholds under the Cal/ARP program are provided in the California Code of Regulations, Title 19 (Public Safety), Division 2, Chapter 4.5, Sections 2735 – 2785.

None of the chemicals at the SGGS will be stored in quantities above the federal thresholds, and only aqueous ammonia would be stored on the project site in a more than Cal/ARP threshold quantity. Aqueous ammonia would be used as the reagent in the SCR emission control system to reduce nitrogen oxide (NO_X) compounds from the exhaust of the gas turbine and heat recovery steam generator (HRSG) units. Figure 7.12-2 shows the proposed ammonia storage tank that will be constructed for the proposed project. Figure 7.12-1 shows the proposed location of the ammonia storage facility on the site plan, as well as the storage or usage locations of other hazardous materials.

Tanker trucks with a capacity of up to about 8,000 gallons will deliver aqueous ammonia to the facility from a supplier somewhere in Southern California. Such deliveries will be made approximately once per week. There are two feasible routes for aqueous ammonia deliveries to the proposed project site; one from the I-15 exiting east onto Foothill Boulevard, then south onto Etiwanda Avenue, and the other from the I-10 exiting onto Etiwanda Avenue, northbound. Upon reaching the proposed project site, the delivery truck will proceed through the existing EGS front gate to the SGGS plant ammonia unloading area along a route that will be chosen to minimize the potential for collisions with site vehicles and avoid passing near chemical storage areas that may contain substances that are incompatible with ammonia. Speed limits within the proposed project site will be strictly enforced.

Aqueous ammonia would be the only hazardous substance present on site in sufficient quantity to be considered a state- or federal-regulated substance subject to the requirements of the Cal/ARP program. Aqueous ammonia would be used in the SCR system to reduce NO_X emissions from the generating units. The 29.4 percent aqueous ammonia solution would be stored in one aboveground storage tank holding a maximum of 15,000 gallons. The tank will be refilled periodically by offloading from ammonia tanker trucks. Existing aqueous ammonia storage facilities to support SCRs for existing EGS Units 3 and 4 will be unaffected by the proposed project.

Offsite Consequence Analysis

This section outlines the contents of an OCA to evaluate potential acute public health impacts from an accidental release of aqueous ammonia. Details of the calculations for this analysis are included below under the heading Model Parameters.

The offsite consequence analysis was performed for two hypothetical accidental release scenarios: "worst-case," and "alternative." The U.S. EPA has specified (40 CFR Part 68.3) that the worst-case release scenario must be "the release of the largest quantity of a regulated substance from a vessel or process line failure that results in the greatest distance to an endpoint." The alternative scenario is considered to be "more realistic," while the worst-case scenario is so conservative as to be almost impossible. However, the probability of occurrence for the alternative scenario is also extremely low.

For each accidental release scenario, distances to specified concentrations (end points) of ammonia were estimated through calculation of emission rates and use of a computer model to predict airborne dispersion and resulting ground-level concentrations. If a specified "level of concern" concentration were predicted to reach off site, then the corresponding potential short-term health effects would be evaluated.

Four levels of concern are used to evaluate public health impacts associated with a hypothetical release of aqueous ammonia:

- **Lethal**. The lethal concentration is 2,000 ppmv averaged over 30 minutes.
- **Immediately Dangerous to Life and Health (IDLH).** The IDLH concentration is 300 ppmv, averaged over 30 minutes (NIOSH, 1997). This concentration was chosen by the National Institute of Occupational Safety and Health (NIOSH) to ensure that workers can escape without injury or irreversible health effects from an IDLH exposure. Exposure to ammonia at or above the IDLH poses a threat of death or immediate or delayed permanent adverse health effects, or prevents those within the affected area to escape from the area.
- **EPA/Cal/ARP Toxic Endpoint.** The Cal/ARP concentration, based on U.S. EPA 40 CFR 68, is 200 ppmv averaged over 1 hour. This concentration was formerly equivalent to the ERPG-2 concentration, and is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.
- **CEC Significance Value.** The California Energy Commission (CEC) uses a more stringent significance value of 75 parts per million (ppm) ammonia averaged over 30 minutes, based on public short-term limits set by the National Research Council. The CEC uses this concentration as a screening guideline to determine the potential for significant impact. CEC has determined that exposure above this level poses a potentially significant risk of adverse health impacts on sensitive members of the general public.

The potential offsite impact of an accidental release of ammonia is considered to be less than significant if the CEC concentration does not reach a public receptor. If concentrations at the Cal/ARP level do not extend off site, then significant concentrations cannot reach any public receptors. Accordingly, a Program 1 RMP would most likely be appropriate and the impact would be considered less than significant. If concentrations greater than the Cal/ARP level are determined to be off the site, a Program 2 or 3 RMP must be considered.

The OCA includes four components:

- Descriptions of the release scenarios, including passive features designed to minimize emissions, in enough detail to allow quantitative analysis;
- An estimation of emission rates associated with each scenario;

- The use of atmospheric dispersion modeling to predict the maximum distances to the ammonia concentration levels of concern in each scenario; and
- An assessment of the potential degree and extent of offsite consequences in terms of the concentrations computed by the dispersion modeling.

The following subsections describe (1) the assumptions used to characterize the worst-case release scenario; (2) the assumptions used to characterize the alternative release scenario; (3) the development of input parameters for the modeling analyses conducted for these scenarios; (4) the selected atmospheric dispersion modeling methodology; and (5) the results of the modeling analysis, including an exposure assessment for potential receptors in the vicinity of the project site.

Worst-Case Release Scenario

Potential accidental releases of aqueous ammonia at the SGGS could involve a spill due to the failure of the storage tank or a spill during the unloading of a tanker truck to a storage tank.

An ammonia spill resulting from failure of a storage tank would result in 15,000 gallons of aqueous ammonia spilling into a concrete containment area. An ammonia spill from the unloading of a tanker truck would potentially release 8,000 gallons of aqueous ammonia into a containment berm. The RMP guidance developed by the U.S. EPA requires that the worst-case release be the release of the largest quantity of a regulated substance from a vessel or process line failure. At the SGGS, the hypothetical worst-case accidental release of ammonia is from the failure of the storage tank, resulting in the immediate release of as much as 15,000 gallons. The circumstances under which this scenario was assumed to occur are so conservative as to be virtually impossible.

The aboveground containment area would be designed to hold the entire contents of a 15,000-gallon storage tank, plus the maximum rainfall that could collect within the containment over a 24–hour maximum recorded rainfall (6.07 inches, Fontana Kaiser Station WRCC 1951-1984). The release rate of the ammonia resulting from tank failure is estimated as the rate of evaporation from the exposed surface area of ammonia.

Alternative Release Scenario

The alternative scenario is considered to be a “more realistic” accidental release event compared with the extremely conservative worst-case scenario. However, the probability of the alternative scenario actually occurring is also extremely low. The alternative scenario would involve a spill of aqueous ammonia from the transfer of ammonia from a tanker truck to the storage tank due either to a break or disconnection of the hose at the beginning of an unloading operation. The containment area is sized to contain the entire contents of the tanker truck (8,000 gallons). The release rate of the ammonia resulting from a spill during the transfer of ammonia is estimated as the rate of evaporation from the exposed surface area of ammonia. Assumptions and detailed calculations are described below.

Model Parameters

The calculations to determine the emission rate of ammonia vapor from an aqueous solution used the following equation (Equation 7.12-1), as recommended by the U.S. EPA (U.S. EPA, 1999):

$$QR = \frac{0.284U^{0.78} MW^{2/3} A \times VP}{82.05T} \qquad \textbf{(Equation 7.12-1)}$$

where: QR = emission rate of ammonia (pounds per minute)
U = wind speed (meters per second)
MW = molecular weight of ammonia (grams per gr-mole)
A = surface area of spilled liquid pool (square feet)
VP = vapor pressure of ammonia above solution (millimeters of mercury)
T = temperature of liquid (degrees Kelvin)

This equation is valid for analysis at 25º Celsius. To adjust for the parameters given in the worst-case and alternate scenarios, the vapor pressure of the ammonia solution is corrected to the corresponding temperatures for the worst-case and alternative scenarios.

Equation 7.12-1 determines the emission rate of the ammonia alone; the evaporative rate of the water in the solution is ignored. The emission rate per unit area required for the selected dispersion model was calculated using Equation 7.12-2:

$$E = \frac{QR_C}{A} \qquad \textbf{(Equation 7.12-2)}$$

where: E = emission rate of ammonia (grams per second meter^2)
QR_C = temperature corrected emission rate of ammonia (grams per second)
A = surface area of spilled liquid pool (square meters)

The surface area of the spilled pool used in Equations 7.12-1 and 7.12-2 is the area of ammonia that is exposed to the atmosphere while in the containment area. The containment area for the storage tank is estimated to be 65 feet by 25 feet. The containment berm for the unloading area has been sized at approximately 75 feet by 17 feet.

The wind speed used in Equation 7.12-1 is taken from Cal/ARP RMP guidance to be 1.5 meters per second (m/s) for the worst-case scenario and 3.0 m/s for the alternative scenario. Low wind speed results in a low volatilization rate, as can be seen in Equation 7.12-1, but also corresponds to a low rate of dispersion of the vapor as it is carried downwind.

The temperature of the released aqueous ammonia is assumed to be 9°F warmer than the air temperature to compensate for the maximum potential increase of temperature within the tank. The Cal/ARP guidance requires the maximum air temperature observed on site in the previous three years; however, to be conservative, the maximum temperature over the entire period of record at the Fontana Kaiser meteorological station (1951-1984) was used. The maximum temperature (117°F recorded during 1955) was used for the worst-case scenario modeling (WRCC, 1951-1984). The mean air temperature during 1951-1984 of 65.9°F was used in the alternative scenario modeling in accordance with the Cal/ARP guidance (WRCC, 1951-1984).

Atmospheric stability is an important meteorological parameter used in modeling the dispersion of the ammonia vapor that vaporizes from the liquid. The worst-case scenario requires the assumption of stability class F, which is the most stable classification. In a stable atmosphere there is little turbulent motion, hence very little mixing occurs, so the ammonia concentration in the plume from a spill would remain high as the vapor is carried downwind under these conditions.

The combination of the maximum observed temperature and extreme atmospheric stability that was assumed for the worst-case modeling scenario is so conservative that it never occurs. Maximum temperature occurs during the mid-afternoon hours when the air is typically unstable or neutral (stability classes A through D). In contrast, F stability occurs during nighttime or early morning before sunrise. Atmospheric stability class D (neutral stability) is used in the alternative scenario.

Table 7.12-3 shows the parameters used to model the ammonia dispersion for the worst-case and alternative release scenarios.

Table 7.12-3
Dispersion Model Parameters

Parameter	Worst-Case Scenario	Alternative Scenario
Ambient Temperature (°F)	117	65.9
Aqueous Ammonia Release Temperature (°F)	126	74.90
Atmospheric Stability Class[a]	F	D
Wind Speed (meters per second)	1.5	3.0
Ammonia Gas Release Area (square feet)	1,625	1,275
Land Use Classification	Urban	Urban
Calculated Emission Rate ($g/s\ m^2$)	0.612	0.384

Notes:
g/sm^2 = grams per second per meter squared
[a] Atmospheric Stability Class D = Neutral
Atmospheric Stability Class F = Stable

Modeling Methodology

To examine the impacts from a hypothetical spill of aqueous ammonia, the U.S. EPA-approved atmospheric dispersion model SCREEN3 was employed. SCREEN3 is a Gaussian plume model that incorporates continuous source and meteorological parameters to estimate hourly concentrations of materials released to the atmosphere.

An accidental aqueous ammonia release would pool in the containment area where ammonia gas will evaporate via laminar mass transfer from the exposed aqueous ammonia that spilled into the containment from either a failed storage tank or a spill during the unloading of the tanker truck. Ammonia gas is lighter than air—it has a molecular weight of 17.03 gram per gram-mole (g/g•mole), whereas air has a molecular weight of about 29 g/g•mole. For the ammonia release scenarios examined in this assessment, a dense gas model, such as SLAB or DEGADIS, would be inappropriate. Only one meteorological condition, a single stability class and wind speed, needs to be examined per scenario. The greatest distance to the toxic endpoint must be determined regardless of wind direction; hence, SCREEN3 is an appropriate model for the required analysis.

In the area source mode of SCREEN3, the ammonia source resulting from a storage tank rupture is represented by a rectangular area, the area of which is equal to the total area of the containment area surrounding the storage tank (65’ × 25’). In the alternative scenario, the modeled area of the ammonia source will be represented by an area source with dimensions equal to the area of the containment berm for the tanker truck unloading (75’ × 17’).

Receptor distances in the dispersion model simulations were measured from the center of the ammonia tank enclosure for the worst-case scenario and from the center of the tanker containment enclosure for the alternative scenario.

Modeling Results

It has been assumed that there is an equal probability of the ammonia dispersing in any direction. Thus, the model results in Figures 7.12-3 and 7.12-4 are shown as circles of equal predicted ammonia concentration around the source. The radii of the circles represent the distances to each "level of concern" concentration used as public health effects thresholds. Tables 7.12-4 and 7.12-5 summarize the modeling results.

Table 7.12-4
Predicted Ammonia Concentrations at Sensitive Receptor Locations

Scenario	Facility Fenceline	Nearest Public Receptor (Big Lots Distribution Center)	Nearest Residence
Worst-Case Scenario Concentration	113.8 ppm	39.7 ppm	28.8 ppm
Alternative Scenario Concentration	11.8 ppm	3.2 ppm	2.2 ppm
Distance from ammonia storage facility	185 meters	530 meters	640 meters

ppm = parts per million

Table 7.12-5
Predicted Distances to Ammonia Levels of Concern

Levels of Concern	Threshold Limit (ppm)	Worst-Case Scenario Distance to Threshold[1] (meters)	Alternative Scenario Distance to Threshold[2] (meters)
Lethal	2,000	62.0	21.6
IDLH	300	186.2	51.2
Cal/ARP	200	217.2	62.6
CEC	75	372.0	104.0

Notes:
[1] Worst-case scenario represents storage tank spill into containment area.
[2] Alternative scenario represents spill from tanker truck unloading.

Neither of the scenarios analyzed here results in a predicted impact exceeding any of the toxic endpoint concentrations at the nearest offsite receptor locations. While all except the lethal threshold extend beyond the facility fenceline in the worst-case scenario, the impacted areas are completely uninhabited (i.e., there are no human receptors to be exposed to a health risk). Therefore, the potential impacts of these hypothesized accidental release scenarios would be less than significant.

Model input and output files generated by the OCA are provided in Appendix R.

The SGGS will be eligible for the Cal/ARP Program 1 level of analysis because it will meet the following requirements:

The distance to a toxic endpoint or flammable endpoint for an ammonia release is less than the distance to any public receptor. The toxic endpoint (i.e., EPA/Cal/ARP concentration) is 200 ppmv for ammonia.

For the 5 years prior to the submission of a RMP, the existing plant has not had an accidental release of a regulated substance in which 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 have been coordinated between the stationary source and local emergency planning and response organizations.

No significant consequences are expected to occur at offsite receptors from either of the analyzed release scenarios because the design features of the proposed project will reduce the likelihood and potential consequences of accidental ammonia releases. Workers at the facility will be trained to avoid and respond to accidental releases of hazardous materials, including ammonia. Hence, proposed project design and worker training will limit the safety hazard due to an accidental aqueous ammonia release to an acceptable level.

Fire and Explosion Risk

Natural gas would be used exclusively as the fuel for the proposed project and would be delivered to the gas turbines by means of a natural gas pipeline. The pipeline would be buried except for small, essential portions that would be above ground at the pressure metering station and gas turbine generators. Keeping the pipeline underground reduces the risk of the line being struck by a vehicle. Because of this passive mitigation measure, the potential impacts presented by the use of the natural gas pipeline would be less than significant.

The risk of a fire or explosion on site would continue to be reduced through adherence to applicable codes and the development and implementation of effective safety management practices.

7.12.3 Cumulative Impacts

The hypothetical accidental releases of aqueous ammonia that have been evaluated for the proposed project are described in the offsite consequence analysis in Section 7.12.2.2. The proposed project site borders an existing SCE switchyard and vacant SCE-owned land to the south, undeveloped SCE-owned land to the west, a parcel to the southwest owned by the Inland Empire Utilities Agency, and Burlington Northern Santa Fe Railroad tracks to the north. The SCE switchyard is the only facility with the exception of the existing plant that would have hazardous materials on site. The EGS currently has aqueous ammonia storage facilities on site in addition to similar chemicals that are projected for the proposed SGGS. However, only nominal quantities of oils, cleaners, gases, and other hazardous materials are stored at the SCE switchyard or EGS. The majority of these materials are stored inside buildings, which would provide containment in the event of a release. The impacts of an ammonia release at the EGS alone have been determined to be less than significant.

Only a natural disaster such as a major earthquake could cause simultaneous accidental releases at any of these facilities. Simultaneous releases of aqueous ammonia from the existing plant and the proposed SGGS project could potentially cause cumulative impacts if the migrating clouds merged. However, based on the OCA, it is unlikely, even under a worst-case scenario, that the ammonia plume generated by the proposed project would not migrate far off site. Therefore, it is determined that no probable significant offsite impacts would occur from potential aqueous ammonia releases at SGGS. Due to the negligible risk of a release from the any of the facilities listed above, there is virtually no potential for hazardous materials from all facilities to produce combined impacts off site. By definition, the proposed project would not therefore contribute to a cumulatively significant impact, and cumulative impacts of the proposed project would be less than significant.

7.12.4 Mitigation Measures

The passive mitigation features included in the project design are the concrete containment area around the aqueous ammonia tank, and the containment area around the tanker truck unloading facilities. These design features will reduce potential offsite impacts in the event of an accidental ammonia release to a less-than-significant level; therefore, additional mitigation measures will not be required.

7.12.5 Laws, Ordinances, Regulations, and Standards

A summary of applicable LORS related to hazardous material handling is provided in Table 7.12-6. The proposed project will be in compliance with applicable LORS during construction and operation of the proposed facilities because the following will be accomplished before aqueous ammonia will be stored or used at the SGGS:

- Workers handling aqueous ammonia for the proposed project will be thoroughly trained;
- The RMP will be prepared by the Applicant; and
- The RMP will be approved by the appropriate local designated agency.

Table 7.12-6
Applicable Hazardous Materials Handling
Laws, Ordinances, Regulations, and Standards

Laws, Ordinances, Regulations, and Standards	Applicability	Administering Agency	AFC Section
Federal			
Clean Air Act, Section 112(r)	Risk Management Plan requirements	U.S. EPA	Section 7.12.2
CERCLA/SARA 40 CFR Part 68.115	Reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely hazardous materials.	U.S. EPA	Section 7.12.2
29 CFR Sections 1910 and 1926	Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	U.S. EPA, Cal-OSHA	Section 7.12

Table 7.12-6
Applicable Hazardous Materials Handling
Laws, Ordinances, Regulations, and Standards

Laws, Ordinances, Regulations, and Standards	Applicability	Administering Agency	AFC Section
State			
California Health and Safety Code 25531-25543,; Final Cal/ARP Regulations, Title 19, Division 2, Chapter 4.5, Sections, 2735-2785	Preparation of a Risk Management Plan for regulated substances on site and a Hazardous Materials Plan.	State Department of Toxic Substances Control, State Regulatory Programs Division	Section 7.12
Local			
California Code of Regulations Title 8 section 5189	Develop and implement safety management plans and risk management plans.	San Bernardino County Fire Department Hazardous Materials Division	Section 7.12
Uniform Fire Code Article 80	Requires secondary containment, monitoring and treatment for accidental releases of toxic gases.	San Bernardino County Fire Department Hazardous Materials Division	Section 7.12.3

Emergency response procedures will be coordinated between facility personnel and local emergency planning and response organizations.

7.12.6 Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Risk Management Plans	San Bernardino County Fire Department, Hazard-ous Materials Division	Greg Beech, Field Service Inspector	(909) 386-8401
Hazardous Materials Business Plans	San Bernardino County Fire Department, Hazard-ous Materials Division	Greg Beech, Field Service Inspector	(909)386-8401
Risk Management Plans	State Department of Toxic Substances Control, State Regulatory Programs Division	Sonia Low, Supervising Hazardous Materials Scientist Watson Gin, Deputy Director	(916) 323-9757 (916) 324-7193
Administering agencies for San Bernardino County	San Bernardino County Fire Department, Hazard-ous Materials Division	Doug Snyder, Assistant Fire Marshal	(909) 386-8401

Issue	Agency/Address	Contact/Title	Telephone
Contact San Bernardino County Fire Department for Response	San Bernardino County Fire Department, Hazardous Materials Division	Joe Ashbaker, Supervisor	(909) 386-8430 or (909) 386-8425
Protect workers by meeting the requirements for equipment to store and handle hazardous materials.	CalOSHA San Bernardino District – 464 W. 4th Street, Suite 332, San Bernardino, CA 92401	On-Call Specialist	(909) 383-4321

7.12.7 Permits Required and Permit Schedule

Responsible Agency	Permit/Approval	Schedule
San Bernardino Fire Department, Hazardous Materials Division	Risk Management Plan	To be submitted prior to SGGS operations.
San Bernardino Fire Department, Hazardous Materials Division	Hazardous Material Business Plan	To be obtained before all hazardous materials have arrived on site.

The Applicant will be responsible for completing a Risk Management Plan, as described by Cal/ARP guidelines, and submitting it to the CUPA for San Bernardino County and to the U.S. EPA.

7.12.8 References

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

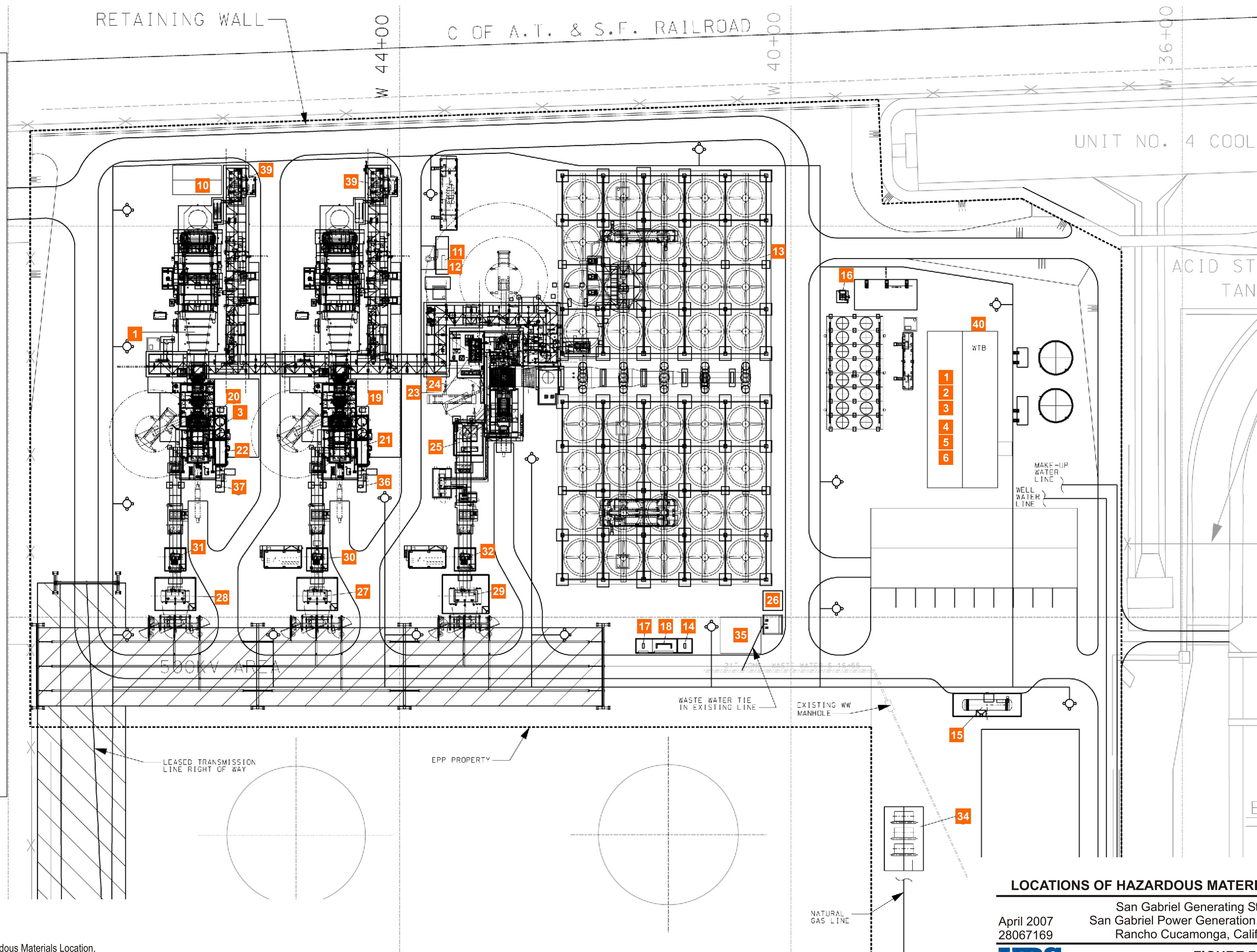
U.S. EPA (U.S. Environmental Protection Agency), 1999. *Risk Management Program Guidance for Offsite Consequence Analysis*, April 1999, EPA 550-B-99-009.

U.S. EPA (U.S. Environmental Protection Agency), 1998. *Emergency Planning and Notification, Appendix A 40 CFR part 355*, July 1, 1998, 52 FR 13395.

WRCC (Western Regional Climate Center), 1951-1984. Climate Historical Summaries, Daily Records for Station 043120, Fontana Kaiser, California.

LEGEND

NO.	STORAGE AREAS
1	SODIUM HYDROXIDE (CAUSTIC) 25% SOLUTION) - 400 GAL. PLASTIC TOTE
2	PERMATREAT PC-191 (ANTISCALANT) - 400 GAL. PLASTIC TOTE
3	NALCO 8103 (POLYELECTROLYTE) - 200 GAL. PLASTIC TANK
4	SODIUM HYPOCHLORITE 10% SOLUTION - 500 GAL. PLASTIC TANK
5	NOT USED
6	SULFURIC ACID 66 BE - 550 GAL. PLASTIC TOTE
7	NALCO 7408 CHLORINE SCAVENGER (BISULFITE) - 400 GAL. ALUMINUM TOTE
8	NOT USED
9	NOT USED
10	ELIMIN-OX (OXYGEN SCAVENGER) - 400 GAL. PLASTIC TOTE
11	TRISODIUM PHOSPHATE - 100 GAL. PLASTIC DAY TANK
12	ELIMIN-OX (OXYGEN SCAVENGER) - 100 GAL. PLASTIC DAY TANK
13	ACC STORAGE (SULFURIC ACID, SODIUM BISULFITE, SODIUM HYPOCHLORITE)
14	BULK STORAGE (PERMATREAT, CAUSTIC, ELIMIN-OX, TRISODIUM PHOSPHATE, POLYELECTROLYTE)
15	AMMONIA 29.4% - 15,000 GAL. BULK STORAGE TANK
16	67% DEMIN WATER - 33% PROPYLENE GLYCOL - 1,500 GAL. STEEL TANK
17	HAZARDOUS WASTE STORAGE - MISCELLANEOUS DRUMS OF WASTE
18	OIL STORAGE AREA - 55 GAL. MISCELLANEOUS CARBON STEEL DRUMS (-20 DRUMS)
19	COMBUSTION TURBINE 1 HYDRAULIC RESERVOIR - 100 GAL. TANK
20	COMBUSTION TURBINE 2 HYDRAULIC RESERVOIR - 100 GAL. TANK
21	COMBUSTION TURBINE 1 LUBE OIL RESERVOIR - 3,600 GAL. TANK
22	COMBUSTION TURBINE 2 LUBE OIL RESERVOIR - 3,600 GAL. TANK
23	STEAM TURBINE LUBE OIL RESERVOIR - 4,500 GAL. TANK
24	DIRTY LUBE OIL TANK - 6,600 GAL. TANK
25	SEAL OIL TANKS - 1,404 GAL. LUBE OIL
26	OIL/WATER SEPARATOR - 4,000 GAL. TANK
27	MAIN POWER TRANSFORMER 1 - 12,478 GAL. TRANSFORMER OIL
28	MAIN POWER TRANSFORMER 2 - 12,478 GAL. TRANSFORMER OIL
29	STEAM TURBINE MAIN POWER TRANSFORMER - 19,661 GAL. TRANSFORMER OIL
30	UNIT AUXILIARY TRANSFORMER 1 - 1,779 GAL. TRANSFORMER OIL
31	UNIT AUXILIARY TRANSFORMER 2 - 1,779 GAL. TRANSFORMER OIL
32	UNIT AUXILIARY TRANSFORMER 3 - 1,779 GAL. TRANSFORMER OIL
33	NOT USED
34	GAS COMPRESSOR LUBE OIL (TBD GALLONS)
35	COMPRESSED HYDROGEN, CARBON DIOXIDE, AND NITROGEN BOTTLE STORAGE AREA (TBD GALLONS)
36	CT1 FIRE PROTECTION SKID (LP CO2) - 6 TON TANK
37	CT2 FIRE PROTECTION SKID (LP CO2) - 6 TON TANK
38	WELDING GASES (ARGON, OXYGEN, AND ACETYLENE) - 14 BOTTLES
39	CEMS GASES CO_1, O_2 & NO_X
40	CITRIC ACID 50% SOLUTION - 55 GAL. DRUM



0 50 100
Scale in Feet

N

Source:
Sargent & Lundy, General Arrangement Chemical & Hazardous Materials Location, Drawing No. GA-06-4 Rev. 0, 03-12-2007 (ga-haz.dgn)

LOCATIONS OF HAZARDOUS MATERIALS

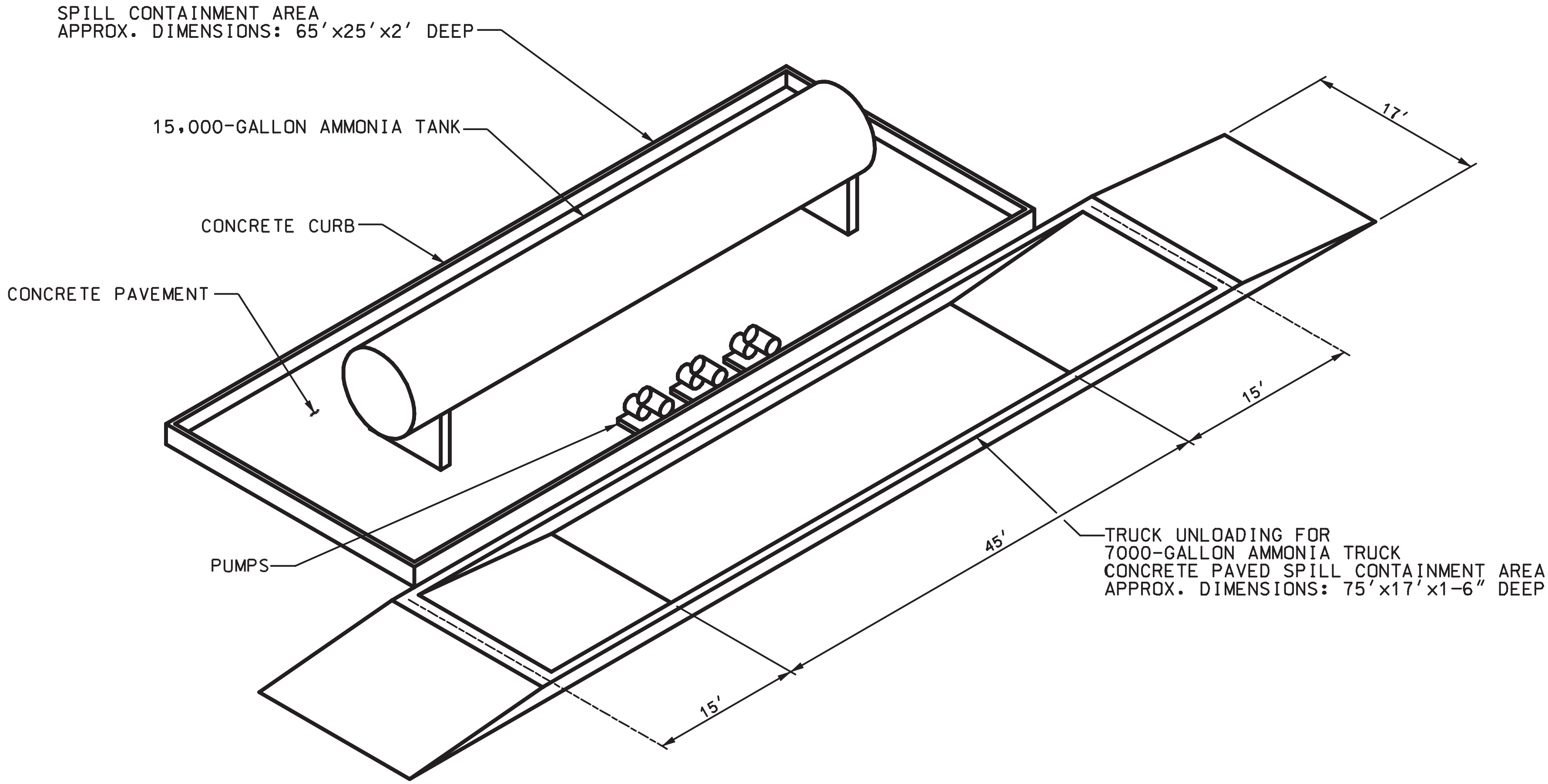
San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

April 2007
28067169

URS

FIGURE 7.12-1

4/09/07 vsa ..\Reliant Etiwanda\Graphics\7.12 Hazardous Materials\7.12-1_locs hazmat.cdr



Source:
Sargent & Lundy; Aqueous Ammonia Storage & Spill Containment
Drawing No: Figure 3.5-6 Rev. 0, 12/18/2006

AQUEOUS AMMONIA STORAGE AND SPILL CONTAINMENT

San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

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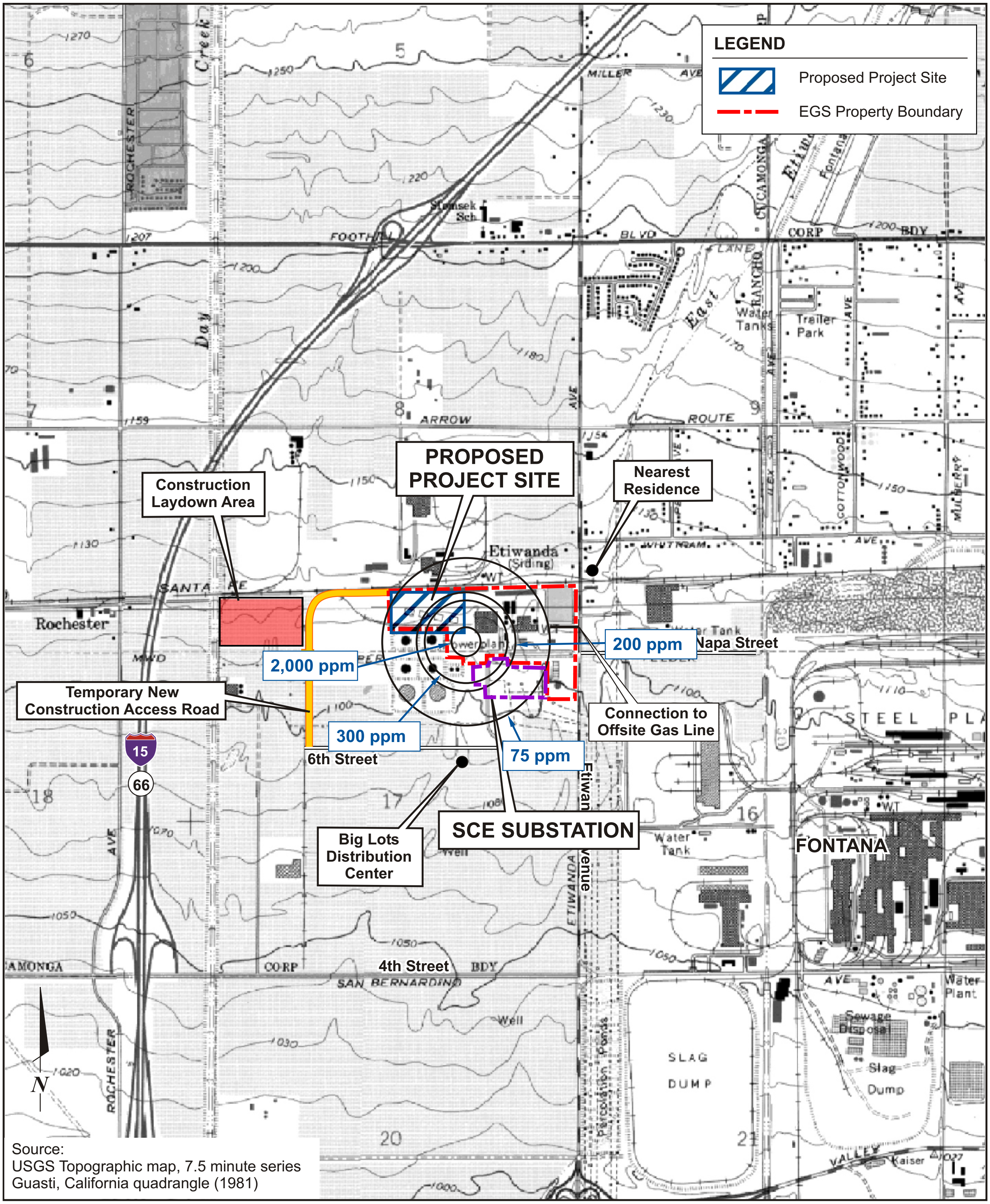
FIGURE 7.12-2



Note:
There are no schools, hospitals, day care facilities, or long term health facilities within one mile of the site.

0 2000 4000
Scale in Feet
1:24,000

WORST-CASE SCENARIO – PREDICTED AMMONIA CONCENTRATION

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Rancho Cucamonga, California

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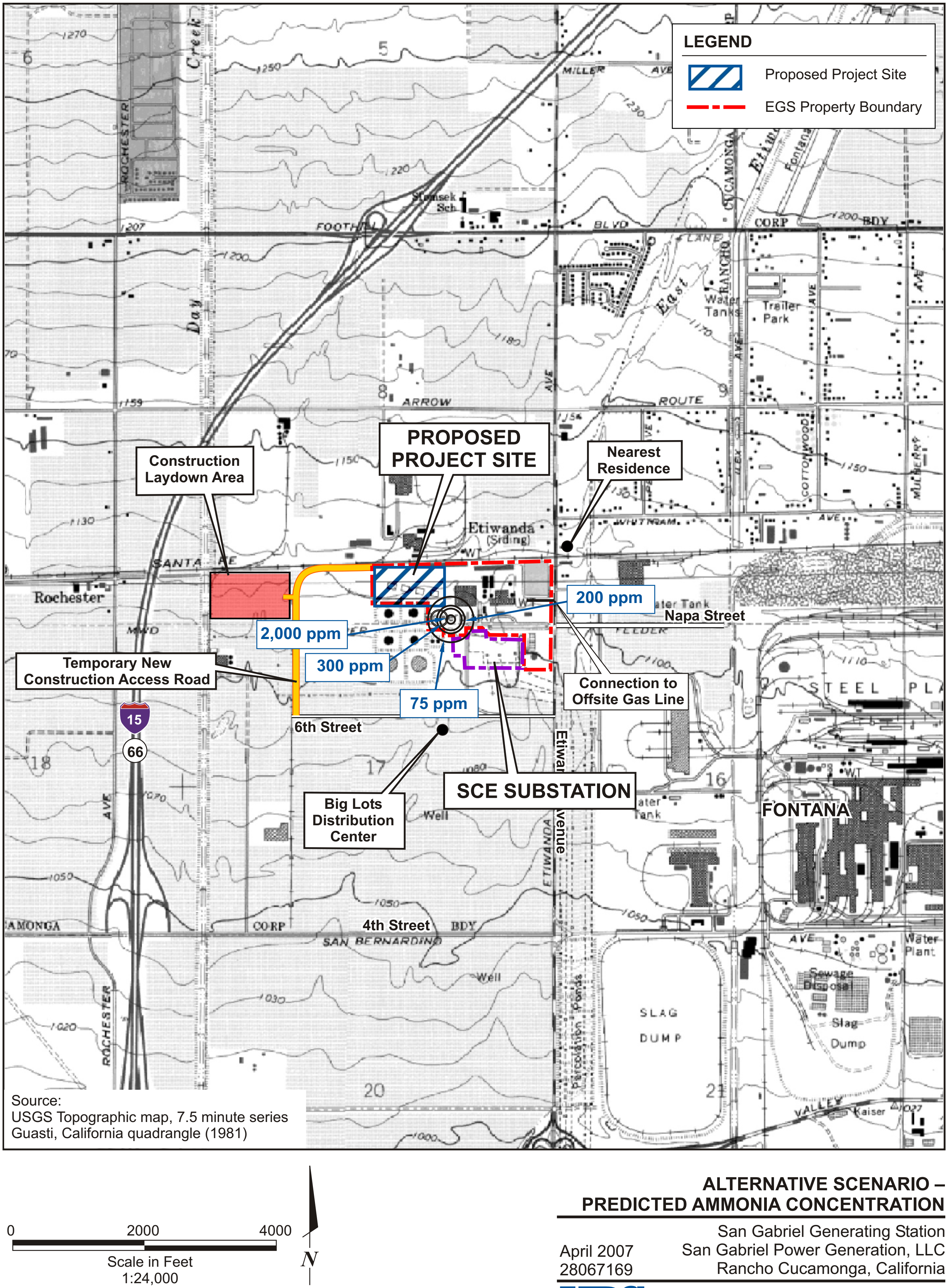
FIGURE 7.12-3

4/09/07 vsa/hk ..\Reliant Etiwanda\Graphics\7.12 Hazardous Materials\7.12-3_worst case.cdr



ALTERNATIVE SCENARIO – PREDICTED AMMONIA CONCENTRATION

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San Gabriel Power Generation, LLC
Rancho Cucamonga, California

April 2007
28067169

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FIGURE 7.12-4

4/09/07 vsa/hk ..\Reliant Etiwanda\Graphics\7.12 Hazardous Materials\7.12-4_alt scen.cdr