

5.5 Hazardous Materials Handling

5.5.1 Introduction

On August 16, 2001, GWF Energy LLC filed an Application for Certification (AFC) with the California Energy Commission (CEC) for the Tracy Peaker Project (TPP). The CEC found the AFC data adequate on October 17, 2001. The CEC released a staff assessment on December 28, 2001, and a supplemental staff assessment on February 1, 2002. The CEC published its Presiding Member's Proposed Decision on May 31, 2002, with the project receiving its Final Decision on July 17, 2002. These documents are incorporated by reference into this AFC and are presented in electronic form in Appendix 1A.

This section evaluates the potential effects on human health and the environment from the storage and use of hazardous materials in conjunction with the GWF Tracy Combined Cycle Power Plant (GWF Tracy). Section 5.5.2 presents the laws, ordinances, regulations and standards (LORS) applicable to hazardous materials. Section 5.5.3 describes the existing environment that may be affected. Section 5.5.4 identifies potential impacts on the environment and on human health from the GWF Tracy site development. Section 5.5.5 addresses potential cumulative effects. Section 5.5.6 presents proposed mitigation measures. Section 5.5.7 describes the agencies involved and provides agency contacts. Section 5.5.8 describes permits required and the permit schedule. Section 5.5.9 provides the references used to develop the section.

5.5.2 Laws, Ordinances, Regulations, and Standards

The storage and use of hazardous materials, including regulated substances, at GWF Tracy are governed by federal, state, and local laws. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination; they are also intended to protect facility workers and the surrounding community from exposure to hazardous materials. The LORS applicable to the GWF Tracy are summarized in Table 5.5-1.

5.5.2.1 Federal LORS

Hazardous materials are governed under Title 29 of the United States Code (USC); Titles 29, 40, and 49 of the Code of Federal Regulations (CFR); and are generally covered by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9601 et seq.); the Resource Conservation and Recovery Act (RCRA), 42 USC 6901 et seq.; the Clean Air Act (CAA), 42 USC 7401 et seq.; and the Clean Water Act (CWA) 33 USC 1251 et seq.

5.5.2.1.1 29 CFR 1910 et seq. and 1926 et seq.

These sections contain requirements for equipment used to store and handle hazardous materials for the purpose of protecting worker health and safety. These regulations also address requirements for equipment necessary to protect workers in emergencies. They are designed primarily to protect worker health, but also contain requirements that affect general facility safety. The California regulations contained in Title 8 (California equivalent of 29 CFR) are generally more stringent than those contained in Title 29. The administering

agency for the above authority is the Occupational Safety and Health Act (OSHA) and the California Occupational Safety and Health Administration (Cal-OSHA).

TABLE 5.5-1
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
29 CFR 1910 et seq. and 1926 et seq.	Requirements for equipment used to store and handle hazardous materials.	EPA and Cal-OSHA	The GWF Tracy will comply with storage requirements to protect worker health and safety (5.5.2.1.1)
49 CFR Parts 172, 173, and 179	Provides standards for labeling and packaging of hazardous materials during transportation.	CHP and DOT	All shipments of material to GWF Tracy will comply with CHP and DOT regulations (5.5.2.1.2)
Section 302, EPCRA (Pub. L. 99-499, 42 USC 11022) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires one time notification if extremely hazardous substances are stored in excess of TPQs.	County of San Joaquin Environmental Health Department	A revised HMBP will be prepared for submittal to County of San Joaquin Environmental Health Department (5.5.2.1.3)
Section 304, EPCRA (Pub. L. 99-499, 42 USC 11002) Emergency Planning And Notification (40 CFR 355)	Requires notification when there is a release of hazardous material in excess of its RQ.	County of San Joaquin Environmental Health Department	An HMBP will be prepared to describe notification and reporting procedures (5.5.2.1.3)
Section 311, EPCRA (Pub. L. 99-499, 42 USC 11021) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and County of San Joaquin Environmental Health Department	County of San Joaquin Environmental Health Department	The HMBP to be prepared will include a list of hazardous materials for submission to agencies (5.5.2.1.3)
Section 313, EPCRA (Pub. L. 99-499, 42 USC 11023) Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR 372)	Requires annual reporting of releases of hazardous materials.	County of San Joaquin Environmental Health Department	The HMBP to be prepared will describe reporting procedures (5.5.2.1.3)

TABLE 5.5-1
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
<p>Section 311, CWA (Pub. L. 92-500, 33 USC 1251 et seq.)</p> <p>Oil Pollution Prevention (40 CFR 112)</p>	<p>Requires preparation of an SPCC plan if oil is stored in a single AST with a capacity greater than 660 gallons or if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.</p>	RWQCB	<p>An SPCC Plan will be prepared (5.5.2.1.5)</p>
<p>Section 112, CAA Amendments (Pub. L. 101-549, 42 USC 7412)</p> <p>Chemical Accident Prevention Provisions (40 CFR 68)</p>	<p>Requires an RMP if listed hazardous materials (designated as “regulated substances”) are stored at or above a TQ. An RMP will not be required under the CAA because GWF Tracy will not store regulated substances above federal TQs. However the state’s CalARP program requirements will require an RMP for aqueous ammonia because the state’s TQ is lower than the federal one.</p>	<p>County of San Joaquin Environmental Health Department (CalARP)</p>	<p>An RMP has been prepared for the TPP and submitted to the County of San Joaquin Environmental Health Department. No revisions are needed for GWF Tracy. (5.5.2.1.4)</p>
<p>Pipeline Safety Laws (49 USC 60101 et seq.)</p> <p>Hazardous Materials Transportation Laws (49 USC 5101 et seq.)</p> <p>Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards (49 CFR 192)</p>	<p>Specifies natural gas pipeline construction, safety, and transportation requirements.</p>	DOT	<p>The natural gas piping will be constructed in accordance with 49 CFR requirements (5.5.4.6)</p>

TABLE 5.5-1
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
State			
8 CCR Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq.	8 CCR Section 339 lists hazardous chemicals relating to Hazardous Substance Information and Training Act; 8 CCR Section 3200 et seq. and 5139 et seq. address control of hazardous substances in places of employment; 8 CCR Section 5160 et seq. Establishes minimum standards for the use, handling, and storage of hazardous substances in all places of employment, and addresses hot, flammable, poisonous, corrosive, and irritant substances.	County of San Joaquin Environmental Health Department	GWF Tracy will store hazardous materials as required by state regulations (5.5.2.2.1)
Health and Safety Code, Section 25500, et seq. (HMBP)	Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	Cal-OSHA	A revised HMBP will be prepared for submittal to the County of San Joaquin Environmental Health Department (5.5.2.2.2)
CalARP Program. Health and Safety Code, Sections 25531 through 25543.4	Requires registration with local CUPA or lead agency and preparation of an RMP if regulated substances are handled or stored in excess of TQs	County of San Joaquin Environmental Health Department	An RMP has been prepared for the TPP and submitted to the County of San Joaquin Environmental Health Department. No revisions are needed for GWF Tracy. (5.5.2.2.3)
Health and Safety Code, Section 25270 through 25270.13 (Aboveground Petroleum Storage Act)	Requires preparation of an SPCC plan if oil is stored in a single AST with a capacity greater than 660 gallons or if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons. The facility will have petroleum in excess of the aggregate volume of 1,320 gallons.	County of San Joaquin Environmental Health Department	An SPCC plan will be prepared (5.5.2.2.4)
Health and Safety Code, Section 25249.5 through 25249.13 (Safe Drinking Water and Toxics Enforcement Act) (Proposition 65)	Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from same toxins.	CA OEHHA	The site will be appropriately labeled for chemicals on the Proposition 65 list. (5.5.2.2.5)
California Fire Code, Article 80	Includes provisions for storage and handling of hazardous materials.	County of San Joaquin Environmental Health Department	5.5.2.2.6

TABLE 5.5-1
Laws, Ordinances, Regulations, and Standards for Hazardous Materials Handling

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
CPUC General Order Nos. 112-E and 58-A	Specifies standards for gas service and construction of gas gathering, transmission, and distribution piping systems.	CPUC	Construction of the natural gas piping will comply with the standards specified in these General Orders (5.5.4.6)
Local			
San Joaquin County Code Section 68.905	Incorporates by reference the California Health and Safety Code Division 20, Chapter 6.11 which requires the facility to operate as a unified program facility.	County of San Joaquin Environmental Health Department	GWF Tracy will operate as a unified program facility and will comply with County of San Joaquin Environmental Health Department requirements concerning storage and handling of hazardous materials and wastes and will also cooperate on resolution of environmental issues at the site. (5.5.2. 2.2)
San Joaquin County General Plan	Provides guidance for siting and management of facilities that store, collect, treat, dispose or transfer hazardous waste and hazardous materials.	County of San Joaquin Environmental Health Department and Tracy Fire Department	GWF Tracy will comply with the City's Hazardous Materials stipulations as put forth in the San Joaquin County General Plan, Public Safety Section (5.5.2.2.2)

Notes:

AST = aboveground storage tank
 CalARP = California Accidental Release Prevention Program
 CA OEHHA = California Office of Environmental Health Hazard Assessment
 CCR = California Code of Regulations
 CHP = California Highway Patrol
 CPUC = California Public Utility Commission
 CUPA = Certified Unified Program Agency (in this case, the County of San Joaquin Environmental Health Department)
 DOT = U.S. Department of Transportation
 EPA = U.S. Environmental Protection Agency
 EPCRA = Emergency Planning and Community Right-to-Know Act

HMBP = Hazardous Materials Business Plan
 LEPC = local emergency planning committee
 MSDS = Material Safety Data Sheet
 Pub. L. = Public Law
 RMP = Risk Management Plan
 RQ = Reportable Quantity
 RWQCB = Regional Water Quality Control Board
 SARA = Superfund Amendments and Reauthorization Act
 SERC = state emergency response commission
 SPCC = Spill Prevention Control and Countermeasure Plan
 TPQ = Threshold Planning Quantity
 TQ = Threshold Quantity

5.5.2.1.2 49 CFR Parts 172, 173, and 179

These regulations provide standards for labels, placards, and markings on hazardous materials shipments by truck (Part 172), standards for packaging hazardous materials (Part 173) and for transporting hazardous materials in tank cars (Part 179). The administering agency for the above authority is the CHP and DOT.

5.5.2.1.3 CERCLA

The Superfund Amendments and Reauthorization Act of 1986 (SARA), an amendment to CERCLA, governs hazardous substances. The applicable part of SARA for the proposed

project is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Title III requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous materials present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous materials. Key sections of the law are:

- Section 302 – Requires that certain emergency planning activities be conducted when Extremely Hazardous Substances (EHSs) are present in excess of their TPQs. EHSs and their TPQs are found in Appendices A and B of 40 CFR Part 355.
- Section 304 – Requires immediate notification to the LEPC and the SERC when a hazardous material is released in excess of its RQ. If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.
- Section 311 – Requires that either MSDSs for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.
- Section 313 – Requires annual reporting of hazardous materials released into the environment either routinely or as a result of an accident.

The administering agencies for the above authority are EPA, Region 9, the National Response Center, and the County of San Joaquin Environmental Health Department, which is the local CUPA.

5.5.2.1.4 Clean Air Act

Regulations (40 CFR Part 68) under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a TQ or greater of listed regulated substances to develop an RMP, including hazard assessments, prevention programs and response programs to prevent accidental releases of listed chemicals. Section 112(r)(5) of the CAA discusses the regulated substances. These substances are listed in 40 CFR 68.130. Aqueous ammonia is a listed substance and its TQ for solutions of 20 percent and greater is 20,000 pounds of solution.

5.5.2.1.5 Clean Water Act

The SPCC program under the CWA is designed to prevent or contain the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Regulations under the CWA (40 CFR Part 112) require facilities to prepare a written SPCC Plan if they store oil and its release would pose a threat to navigable waters. The SPCC program is applicable if a facility has a single oil AST with a capacity greater than 660 gallons, total AST storage greater than 1,320 gallons, or underground storage capacity greater than 42,000 gallons. The SPCC program is administered by the local CUPA. Compliance with other elements of the CWA, such as storm water management and National Pollution Discharge Elimination System permitting, is described in Section 5.15, Water Resources.

5.5.2.1.6 Natural Gas Pipeline Construction and Safety

Title 40 of the CFR, parts 190 through 192, specifies safety and construction requirements for natural gas pipelines. Part 190 outlines pipeline safety procedures, Part 191 requires a written report for any reportable incident, and Part 192 specifies minimum safety requirements for pipelines.

5.5.2.1.7 Other

Other related federal laws that address hazardous materials but do not specifically address their handling are the RCRA, which is discussed in Section 5.14, Waste Management, and OSHA, which is discussed in Section 5.16, Worker Health and Safety.

5.5.2.2 State LORS

California laws and regulations relevant to hazardous materials handling at GWF Tracy Project include Title 8 of the California Code of Regulations, Health and Safety Code Section 25500 (hazardous materials), Health and Safety Code Section 25531 (regulated substances), and the Aboveground Petroleum Storage Act (petroleum in aboveground tanks).

5.5.2.2.1 8 CCR Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq. 8 CCR Section 339 lists hazardous chemicals relating to Hazardous Substance Information and Training Act; and 8 CCR Section 3200 et seq. and 5139 et seq. address control of hazardous substances; 8 CCR Section 5160 et seq. addresses hot, flammable, poisonous, corrosive, and irritant substances, and establishes minimum standards for the use, handling, and storage of hazardous substances in all places of employment.

5.5.2.2.2 Health and Safety Code Section 25500

This law is found in the California Health and Safety Code, Section 25500, et seq., and in the regulations contained in 19 CCR Section 2620, et seq. The law requires local governments to regulate business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local administering agency (i.e., CUPA). They must also report releases to their CUPA and the Governor's Office of Emergency Services. The threshold quantities for hazardous materials are 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases measured at standard temperature and pressure.

5.5.2.2.3 Health and Safety Code Section 25531

California Health and Safety Code, Section 25531, et seq., and CalARP regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an extremely hazardous substance by EPA as part of its implementation of SARA Title III. Health and Safety Code Section 25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above TPQs must register with their local CUPA and prepare an RMP, formerly known as a Risk Management and Prevention Program. The CalARP is found in Title 19, CCR, Chapter 4.5. The TPQ for ammonia is 500 pounds. Portions of the aqueous ammonia process that can be demonstrated to have a partial pressure of the regulated substance in the mixture (solution), under the handling or storage conditions, (which is less than 10 millimeters of mercury) do not count toward the threshold.

5.5.2.2.4 Aboveground Petroleum Storage Act

The California Health and Safety Code Sections 25270 to 25270.13 ensure compliance with the federal CWA. The law applies to facilities that operate a petroleum AST with a capacity greater than 660 gallons or combined ASTs capacity greater than 1,320 gallons or oil-filled equipment where there is a reasonable possibility that the tank(s) or equipment may discharge oil in “harmful quantities” into navigable waters or adjoining shore lands. If a facility falls under these criteria, it must prepare an SPCC plan. GWF Tracy’s facility will store over 1,320 gallons of petroleum products and will update the existing SPCC plan to include additional petroleum products brought onsite for the project.

5.5.2.2.5 Safe Drinking Water and Toxics Enforcement Act (Proposition 65)

This California law requires the State to identify chemicals that cause cancer and reproductive toxicity, contains requirements for informing the public of the presence of these chemicals, and prohibits discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically by CA OEHHA. Some of the chemicals to be used at the facility are on the cancer-causing and reproductive-toxicity lists of the Act.

5.5.2.2.6 Natural Gas Pipeline Construction and Safety

The CPUC enforces General Order No. 58-A specifying standards for natural gas service in the State of California, and General Order No. 112-E specifying rules governing the design, construction, testing, operation, and maintenance of natural gas gathering, transmission, and distribution piping systems.

5.5.2.2.7 California Fire Code, Article 80 and others

The Code includes provisions for storage and handling of hazardous materials. There is considerable overlap between this code and Chapter 6.95 of the California Health & Safety Code. The Fire Code, however, contains independent provisions regarding fire protection and neutralization systems for emergency venting [see Section 80.303, D (compressed gases)]. Article 4 establishes hazardous materials storage thresholds above which a permit is required. Article 79 presents requirements for combustible and flammable liquids. The administering agency for the above authority is the County of San Joaquin Environmental Health Department, jointly with the City of Tracy’s Fire Department.

5.5.2.3 Local LORS

The San Joaquin Environmental Health Department is the designated CUPA and is responsible for administering HMBPs, Hazardous Materials Management Plans, SPCC Plans, and RMPs filed by businesses located in the County. The County of San Joaquin Environmental Health Department is also responsible under the CUPA program for underground storage tank compliance. In addition, the County of San Joaquin Environmental Health Department is responsible for ensuring that businesses and industry store and use hazardous materials safely and in conformance with various regulatory codes. The County of San Joaquin Environmental Health Department performs inspections at established facilities to verify that hazardous materials are properly stored and handled and that the types and quantities of materials reported in a firm’s HMBP are accurate.

5.5.2.4 Other Codes

The design, engineering, construction, and operation of hazardous materials storage and dispensing systems will be in accordance with applicable codes and standards, including the following:

- California Vehicle Code, 13 CCR 1160, et seq. – Provides the CHP with authority to adopt regulations for the transportation of hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery.
- State Building Standard Code, Health and Safety Code Sections 18901 to 18949 – Incorporates the Uniform Building Code, Uniform Fire Code, and Uniform Plumbing Code.
- The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII.

5.5.3 Affected Environment

Land use in the area surrounding the GWF Tracy site (discussed in detail in Section 5.6, Land Use) is primarily industrial, agricultural, residential, and open space. Sensitive receptors located by Environmental Data Resources, Inc. (EDR) within a 6-mile radius of the project site include 32 schools, nine day care facilities, one college, one medical facility, and two nursing homes (EDR, 2008). These receptors are listed in Appendix 5.5A, and shown on Figure 5.5-1a. In addition, two additional schools were located including George Kelly Elementary School and Anthony Traina Elementary School. These schools are identified in Figure 5.5-1b. The nearest of these receptors, as well as the nearest school to the GWF Tracy site is George Kelly Elementary School located at 535 Mabel Josephine Dr., approximately 1.5 miles northeast of the project site. The nearest hospital/long-term health care facility is the Sutter Tracy Community Hospital located approximately 3.6 miles to the northeast in Tracy, California.

5.5.4 Environmental Analysis

Hazardous materials to be used at GWF Tracy during construction and operation were evaluated for hazardous characteristics. That evaluation is discussed in this section. Some of these materials will be continuously stored at the project site. Others will be brought onsite for the initial startup and periodic maintenance (every 3 to 5 years). Some materials will be used only during startup. Hazardous materials will not be stored or used in the gas supply line, water supply line, or electric transmission line corridors during operations. Storage locations are described in Table 5.5-2. Table 5.5-3 presents information about these materials, including trade names, chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities onsite, RQs, TPQs, TQs, and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans).

Toxicity characteristics and the exposure level criteria for regulated substances that will be handled at GWF Tracy in quantities exceeding TQs are shown in Table 5.5-4. Health hazards and flammability data are summarized in Table 5.5-5. Table 5.5-5 also contains information on incompatible chemicals (e.g., ammonia). Measures to mitigate the potential effects from the hazardous materials are presented in Section 5.5.6.

TABLE 5.5-2
Use and Location of Hazardous Materials

Chemical	Use	Quantity)	Storage Location	State	Type of Storage
Aqueous Ammonia (29.5% NH ₃ by weight)	Control oxides of nitrogen (NO _x) emissions through selective catalytic reduction	67,000 lb	Aqueous ammonia storage tanks	Liquid	Continuously Onsite
Citric Acid	Cleaning reverse osmosis units	Varies as need (approx 100 lb)	Pallet supported chemical storage bags in protected temporary storage location onsite.	Solid Powder	Initial Startup and Periodically Onsite
Cleaning chemicals/detergents for Turbine Wash	Periodic cleaning of combustion turbine	Varies as needed (approx 100 gal)	Chemical storage tote or drums at a protected temporary storage location onsite.	Liquid	Continuously Onsite
Diesel No. 2	Fuel for fire pump engine/offroad vehicles	200 gal	Permanent onsite storage in above ground storage tank with secondary containment.	Liquid	Continuously Onsite
General Dispersant – Cyanamer P-70	Anti-scalant Dispersant	55 gal	Water Treatment Building	Liquid	Continuously Onsite
Hydraulic Oil	High-pressure combustion turbine starting system, turbine control valve actuators	500 gal	Onsite 55 Gallon Drums	Liquid	Continuously Onsite
Hydrochloric Acid	Lube Oil Cooler (WSAC) pH control	Varies as needed (approx 100 gal)	Water Treatment Building	Liquid	Continuously Onsite
Laboratory reagents	Water/wastewater laboratory analysis	10 gal liquids 100 lb solids	Laboratory chemical storage cabinets (stored in original chemical storage containers/bags)	Liquid and Granular Solid	Continuously Onsite
Lubrication Oil	Lubricate rotating equipment (e.g., gas turbine and steam turbine bearings)	40,000 gal	Contained within equipment	Liquid	Continuously Onsite
Mineral Insulating Oil	Transformers/switchyard	80,000 gal	Contained within equipment	Liquid	Continuously Onsite
Oxygen / Acetylene	Welding Gas	880 cubic feet	Maintenance/Warehouse bldg	Gas	Continuously Onsite

TABLE 5.5-2
Use and Location of Hazardous Materials

Chemical	Use	Quantity)	Storage Location	State	Type of Storage
Permatreat PC-191	Scale inhibitor for reverse osmosis	400 gal	Water treatment building	Liquid	Continuously Onsite
Sodium Hydroxide (NaOH) (50% solution)	Convert CO ₂ to alkalinity for removal by reverse osmosis	500 gal	Water treatment building	Liquid	Continuously Onsite
Sodium Nitrate A DHS CFATS Chemical of Interest (must be <400 lb)	Cleaning of HRSG	Varies as needed (approx 500 lb)	Outside near each HRSG	Solid	Initial startup and periodically onsite
Sulfur hexafluoride	Switchyard/ switchgear devices	200 lb	Contained within plant equipment	Gas	Continuously Onsite
Trisodium Phosphate (Na ₃ PO ₄) (e.g., NALCO 7208)	Boiler water alkalinity control	400 gal	Cycle chemical feed building	Liquid	Continuously Onsite
Propylene Glycol	Antifreeze	2,000 gal	NE of #1 exhaust stack and E of #2	Liquid	Continuously Onsite
Sodium Hypochlorite	Water Treatment	120 gal	Water Treatment Building	Liquid	Continuously Onsite
Sulfuric Acid (Lead-Acid Batteries)	Battery Electrolyte	3,000 lb	Inside the Turbine Complexes and Switchyard Control Building	Liquid	Continuously Onsite
Acetylene	Welding Gas	650 ft ³	Maintenance Building	Gas	Continuously Onsite
Nitric Oxide (balance Nitrogen)	CEMS Calibration Std.	2,200 ft ³	NE of #1 exhaust stack and E of #2	Gas	Continuously Onsite
Carbon Monoxide (balance Nitrogen)	CEMS Calibration Std.	1,600 ft ³	NE of #1 exhaust stack and E of #2	Gas	Continuously Onsite

TABLE 5.5-3
GWF Tracy Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ ^a	RQ of Material as Used Onsite ^b	EHS TPQ ^c	Regulated Substance TQ ^d	Prop 65
Aqueous ammonia	Aqueous ammonia (29.5%)	7664-41-7 (NH ₃)	67,000 gal	100 lb	100 lb	500 lb	500 lb (state)	No
Citric acid	Citric acid	77-92-9	Varies as need (approx 100 lb)	e	e	e	e	No
Cleaning chemicals/detergents	Various	None	Varies as needed (approx 100 gal)	e	e	e	e	No
Diesel No. 2	Oil	None	200 gal	42 gal ^f	42 gal ^f	e	e	Yes
Cyanomer P-70	Proprietary	Proprietary	55 gal	e	e	e	e	No
Hydraulic oil	Oil	None	500 gal	42 gal ^f	42 gal ^f	e	e	No
Hydrochloric acid (reverse osmosis cleaning)	Hydrochloric acid (30%)	7647-01-0	Varies as needed (approx 100 gal)	5,000 lb	16,667 lb	e	e	No
Laboratory reagents (liquid)	Various	None	10 gal	e	e	e	e	No
Laboratory reagents (solid)	Various	None	100 lb	e	e	e	e	No
Lubrication oil	Oil	None	40,000 gal	42 gal ^f	42 gal ^f	e	e	No
Mineral insulating oil	Oil	8012-95-1	80,000 gal	42 gal ^f	42 gal ^f	e	e	Yes
Oxygen / Acetylene	Oxygen	7782-44-7	880 cubic feet	e	e	e	e	No
Permatreat PC-191	Proprietary mixture	Proprietary	400 gal	e	e	e	e	No
Sodium hydroxide (50% solution)	Sodium hydroxide 50%	1310-73-2	500 gal	1,000 lb	2,000 lb	e	e	No
Sodium nitrate	Sodium nitrate	7631-99-4	Varies as needed (approx 500 lb)	e	e	e	e	No
Sulfur hexafluoride	Sulfur hexafluoride	2551-62-4	200 lb	e	e	e	e	No
Trisodium phosphate	Sodium phosphate, tribasic	7601-54-9	400 gal	5,000 lb	5,000 lb	e	e	No

TABLE 5.5-3
GWF Tracy Chemical Inventory

Trade Name	Chemical Name	CAS Number	Maximum Quantity Onsite	CERCLA SARA RQ ^a	RQ of Material as Used Onsite ^b	EHS TPQ ^c	Regulated Substance TQ ^d	Prop 65
Antifreeze	Propylene Glycol	57-55-6	2,000 gal	e	e	e	e	No
Sodium Hypochlorite	Sodium Hypochlorite	7681-52-9	120 gal	100 lb	100 lb	e	e	No
Sulfuric Acid (Lead-Acid Batteries)	Sulfuric Acid	7664-93-9	3,000 lb	1,000 lb	1075 lb	1000 lb	e,g	No
Acetylene	Acetylene	74-86-2	650 ft ³	e	e	e	e	No
Nitric Oxide (balance Nitrogen)	Nitric Oxide	10102-43-9	2,200 ft ³	10 lb	10 lb	100 lb	10,000 lb	No
Carbon Monoxide (balance Nitrogen)	Carbon Monoxide	630-08-0	1,600 ft ³	e	e	e	e	Yes

^a Reportable quantity for a pure chemical, per CERCLA (Ref. 40 CFR 302, Table 302.4). Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.

^b Reportable quantity for materials as used onsite. Since some of the hazardous materials are mixtures that contain only a percentage of a reportable chemical, the reportable quantity of the mixture can be different than for a pure chemical. For example, if a material only contains 10% of a reportable chemical and the RQ is 100 lb, the reportable quantity for that material would be (100 lb)/(10%) = 1,000 lb

^c EHS TPQ (Ref. 40 CFR Part 355, Appendix A). If quantities of extremely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.

^d TQ is Threshold Quantity from 19 CCR 2770.5 (state) or 40 CFR 68.130 (federal)

^e No reporting requirement. Chemical has no listed threshold under this requirement

^f State reportable quantity for oil spills that will reach California state waters [Ref. CA Water Code Section 13272(f)]

^g There is a state TQ of 1,000 lb for sulfuric acid that does not apply to this form of sulfuric acid

TABLE 5.5-4
Toxic Effects and Exposure Levels of Regulated Substances Exceeding TQs

Name	Toxic Effects	Exposure Levels
Aqueous Ammonia (29.5% solution)	Toxic effects for contact with pure liquid or vapor causes eye, nose, and throat irritation, skin burns, and vesiculation. Ingestion or inhalation causes burning pain in mouth, throat, stomach, and thorax, constriction of thorax, and coughing followed by vomiting blood, breathing difficulties, convulsions, and shock. Other symptoms include dyspnea, bronchospasms, pulmonary edema, and pink frothy sputum. Contact or inhalation overexposure can cause burns of the skin and mucous membranes, and headache, salivation, nausea, and vomiting. Other symptoms include labored breathing, bloody mucous discharge, bronchitis, laryngitis, hemmoptysis, and pneumonitis. Damage to eyes may be permanent, including ulceration of conjunctiva and cornea and corneal and lenticular opacities.	<p>Occupational Exposures PEL = 35 mg/m³ OSHA TLV = 18 mg/m³ ACGIH TWA = 25 mg/m³ NIOSH* STEL = 35 mg/m³</p> <p>Hazardous Concentrations IDLH = 500 ppm LD50 = 350 mg/kg - oral, rat ingestion of 3 to 4 mL may be fatal</p> <p>Sensitive Receptors ERPG-1 = 25 ppm ERPG-2 = 150 ppm ERPG-3 = 1,000 ppm</p>

*Source: NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Public Health Service Centers for Disease Control. (U.S. Department of Health and Human Services, 1990).

Notes:

ACGIH = American Conference of Government Industrial Hygienists

ERPG = Emergency Response Planning Guideline

ERPG-1 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse health effects

ERPG-2 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without developing irreversible or serious health effects

ERPG-3 = Maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing life-threatening health effects

IDLH = Immediately dangerous to life and health

LD50 = Dose lethal to 50 percent of those tested

mg/kg = Milligrams per kilogram

mg/m³ = Milligrams per cubic meter

NIOSH = National Institute of Occupational Safety and Health

PEL = OSHA permissible exposure limit for 8-hour workday

ppm = parts per million

STEL = Short-term exposure limit, 15-minute exposure

TLV = ACGIH threshold limit value for 8-hour workday

TWA = NIOSH time-weighted average for 8-hour workday

TABLE 5.5-5
Toxicity of Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability*
Aqueous ammonia	Colorless liquid with pungent odor	<i>Corrosive:</i> Irritation to permanent damage from inhalation, ingestion, and skin contact.	Acids, halogens (e.g., chlorine), strong oxidizers, salts of silver and zinc.	Liquid is incombustible; Vapor is combustible, but difficult to burn
Acetylene	Colorless gas	Asphyxiant gas	Oxygen and other oxidizers including all halogens and halogen compounds with copper, mercury, silver, brasses containing >66% copper and brazing materials containing silver or copper.	Flammable
Carbon Monoxide	Colorless, tasteless gas	Headaches, dizziness, convulsions, loss of consciousness, death	Oxidizers including oxygen difluoride and barium peroxide.	Flammable
Citric acid	Translucent crystals	None.	None.	Non-flammable
Cleaning chemicals/detergents	Liquid	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Diesel No. 2	Oily, light liquid	May be carcinogenic.	Sodium hypochlorite. Oxidizers.	Flammable
General dispersant (Cyanamer P-70)	Straw-colored liquid with ammonia odor	May irritate eyes and skin.	Strong acids and oxidizing agents.	Non-flammable
Hydraulic oil	Oily, dark liquid	Hazardous if ingested.	Sodium hypochlorite. Oxidizers.	Combustible
Hydrochloric acid	Colorless, pungent, fuming liquid	<i>Strongly Corrosive and Toxic:</i> Toxic by ingestion. Strong irritant to eyes and skin.	Metals, hydroxides, amines, alkalis.	Non-flammable
Laboratory reagents	Liquid and solid	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels
Lubrication oil	Oily, dark liquid	Hazardous if ingested.	Sodium hypochlorite. Oxidizers.	Flammable
Mineral insulating oil	Oily, clear liquid	Minor health hazard.	Sodium hypochlorite. Oxidizers.	Can be combustible, depending on manufacturer

TABLE 5.5-5
Toxicity of Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability*
Nitric Oxide	Colorless gas. Nitric oxide + oxygen in air is reddish brown in color with an acid-suffocating odor.	Irritating to eyes and respiratory system. Cyanosis. Inhalation may result in chemical pneumonitis and pulmonary edema.	Oxidizing agents, halides, hydrocarbons and oxygen. Reacts vigorously with fluorine, fluorine oxides and chlorine in the presence of moisture.	Non-flammable
Oxygen	Colorless, odorless, tasteless gas	Therapeutic overdoses can cause convulsions. Liquid oxygen is an irritant to skin.	Hydrocarbons, organic materials.	Oxidizing agent; actively supports combustion
Permatreat PC-191	Mix of phosphonates	May cause irritation with prolonged contact	Strong oxidizing agents, strong acids.	Not Flammable
Propylene Glycol	Colorless, odorless viscous liquid	Causes irritation	Strong oxidizing agents.	Combustible
Sodium hydroxide (50%)	Clear yellow liquid	<i>Corrosive:</i> Irritant to tissue in presence of moisture; strong irritant to tissue by ingestion.	Water, acids, organic halogens, some metals.	Non-flammable
Sodium hypochlorite	Pale green; sweet, disagreeable odor. Usually in solution with water or sodium hydroxide.	<i>Corrosive and Toxic:</i> Toxic by ingestion. Strong irritant to tissue.	Ammonia and organic materials.	Fire risk when in contact with organic materials
Sodium nitrate	Colorless crystals	<i>Toxic:</i> Mildly toxic by ingestion.	Acetic anhydride, aluminum powder, antimony powder, barium thiocyanate, cyanides, bitumen, boron phosphide, magnesium, metal amidosulfates, organic matter, perosyformic acid, sodium hypophosphite, wood.	Non-flammable
Sulfur hexafluoride	Colorless gas with no odor.	Hazardous if inhaled.	Disilane.	Non-flammable

TABLE 5.5-5
Toxicity of Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability*
Sulfuric Acid (Lead Acid Batteries)	Colorless, dense, oily liquid.	<i>Strongly Corrosive:</i> Strong irritant to all tissue. Minor burns to permanent damage to tissue	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Non-flammable
Trisodium phosphate	Colorless crystals.	<i>Corrosive and Toxic:</i> Toxic by ingestion. Irritant to tissue.	None.	Non-flammable

Data were obtained from MSDSs and Lewis (1991).

* Per DOT regulations, under 49 CFR 173: "Flammable" liquids have a flash point less than or equal to 141°F; "Combustible" liquids have a flash point greater than 141° F.

5.5.4.1 Construction Phase

Hazardous materials to be used during construction of GWF Tracy will include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

The quantities of hazardous materials that will be onsite during construction are small, relative to the quantities used during operation. Construction personnel will be trained to handle the materials properly. The most likely possible incidents would involve the potential for fuels, oil, and grease dripping from construction equipment. The small quantities of fuel, oil, and grease that might drip from construction equipment will have relatively low toxicity and will be biodegradable. Therefore, the expected environmental impact is minimal.

Small oil spills may also occur during onsite refueling. Equipment refueling will be performed away from water bodies to prevent contamination of water in the event of a fuel spill. Therefore, the potential environmental effects from fueling operations are expected to be limited to small areas of contaminated soil. If a fuel spill occurs on soil, the contaminated soil will be placed into barrels or trucks for offsite disposal as a hazardous waste. The worst-case scenario for a chemical release from fueling operations would be a vehicle accident involving a service or refueling truck.

The quantities of hazardous materials that will be handled during construction are relatively small and Best Management Practices (BMPs) will be implemented by contractor personnel. Therefore, the potential for environmental effects is expected to be small.

During construction of the project and its linear facilities, regulated substances, as defined in California's Health and Safety Code, Section 25531, will not be used. Therefore, no discussion of regulated substance storage or handling is included in this section. Handling procedures for the non-CalARP regulated hazardous materials to be used onsite during construction are presented in Section 5.5.6.1.

5.5.4.2 Operations Phase

Several hazardous materials, including one acutely hazardous and regulated substance (aqueous ammonia) will be stored at the generating site during GWF Tracy operations. Figure 5.5-2 shows the hazardous materials storage/use locations on the project site. Aqueous ammonia will be stored in amounts above the CalARP threshold quantity. An RMP that has been prepared consistent with the CalARP program requirements is already in place for the existing TPP plant and will not need revisions for GWF Tracy. Figure 5.5-3 presents a piping and instrument diagram for the aqueous ammonia system. Many of the hazardous materials that will be stored onsite are corrosive and are a threat to humans (particularly workers at the site) if inhaled, ingested, or contacted with the skin.

Potential environmental and/or human health effects could be caused by accidental releases, accidental mixing of incompatible chemicals, fires, and injury to facility personnel

from contact with a hazardous material. The accidental release of aqueous ammonia might present serious potential for effects on the environment and/or human health.

The GWF Tracy facility will store the 29.5-percent aqueous ammonia solution in an existing stationary AST at the TPP facility. The capacity of the tank is approximately 9,000 gallons, but will not be filled to the maximum storage capacity due to the physical limitations of filling a pressurized storage tank. The tank is a double-walled tank, which will contain leaks from the primary tank.

Aqueous ammonia is currently delivered by truck transport to the TPP facility and will continue to be delivered once GWF Tracy is operational. The truck unloading area is located on a concrete unloading pad adjacent to the storage tank. The floor of the unloading area slopes to a center drain leading to an underground containment tank. The underground tank will be adequate to hold the entire contents of a single 6,700-gallon delivery truck plus a wash water allowance. The unloading pad drain line to the underground storage tank is blocked except during unloading operations to prevent rainwater from collecting in the tank. The use of 29.5-percent aqueous ammonia will require an average of approximately one or two deliveries of ammonia per month, with a maximum of five deliveries per month during peak operation.

Pure ammonia (NH_3) is a volatile chemical that is stored under pressure as a liquid and becomes a toxic gas if released. The odor threshold of ammonia is about 5 parts per million (ppm), and minor irritation of the nose and throat will occur at 30 to 50 ppm. Concentrations greater than 140 ppm will cause detectable effects on lung function even for short-term exposures (0.5 to 2 hours).

At higher concentrations of 700 to 1,700 ppm, ammonia gas will cause severe effects; death occurs at concentrations of 2,500 to 7,000 ppm. The hazard to facility workers will be mitigated by facility safety equipment, hazardous materials training, and emergency response planning (see Section 5.16, Worker Health and Safety). An Offsite Consequence Analysis (OCA) was prepared under the original TPP AFC process pursuant to the U.S. Environmental Protection Agency (EPA) RMP Offsite Consequence Analysis Guidance (EPA, 1999) The OCA will remain the same with the addition of GWF Tracy at the site. The results of the OCA presented in Section 5.5.4.3, show that a release of a 29.5-percent solution of aqueous ammonia under a worst-case scenario will not cause significant offsite impacts to public health or safety.

The remaining materials in Table 5.5-3 are also considered to be hazardous, but they pose less threat to humans than aqueous ammonia. Some materials (citric acid and sodium nitrate) will be used at the site only during initial commissioning and during periodic maintenance (once every 3 to 5 years). Therefore, the potential for environmental or health effects will exist only during those rare occasions when the materials are on site.

5.5.4.3 Offsite Consequence Analysis

An OCA was prepared during the TPP AFC process. A brief summary of this OCA is presented below.

The OCA prepared for the TPP involved two accidental release scenarios. The first scenario is considered a "plausible" release scenario, while the second scenario is considered a worst-case release. A truck unloading accident was identified as the "worst-case" scenario, and

assumes that the truck contents will empty and drain into the existing underground tank. The “worst-case” scenario also identifies meteorological conditions of no wind, and the highest temperature known in the area for a 41-year period. For the purposes of this assessment, the alternative (“plausible”) release analysis also considered a truck unloading accident, but under more “plausible” meteorological conditions (i.e., higher wind speed and an average temperature).

During truck unloading, the spilled aqueous ammonia splashes as it releases and drains to the underground containment vault, after which time ammonia will evaporate only through a 10-inch opening of the inlet drain. The resulting emissions release is assumed to last 60 minutes until the vault can be closed. Modeling parameters used for the SCREEN3 dispersion model are identified in Table 5.5-6, and modeling results are identified in Table 5.5-7.

TABLE 5.5-6
Accidental Release Scenario Release Rates And Meteorological Conditions

Ambient Temperature (°F)	Wind Speed (m/s)	Stability Class ^a	Assumed Liquid Temperature (°F) ^b	Release Rate (kg/s)
60	1.0	F	80	0.0001139
60	3.5	D	80	0.0002916
90	1.0	F	110	0.0001866
90	3.5	D	110	0.0004775
115	1.0	F	135	0.0002464
115	3.5	D	135	0.0006304

^a Stability classes:

F = Stable conditions

D = Neutral conditions

^b Released aqueous ammonia assumed to be 20°F higher for conservative calculation of evaporation rate.

TABLE 5.5-7
Dispersion Modeling Results

Ambient Temperature (°F)	Wind Speed (m/s)	Stability Class ^a	Distance to Various Levels of Concern (m)			
			2,000 ppm	300 ppm	200 ppm	75 ppm
60	1.0	F	3.11	9.96	12.96	22.21
60	3.5	D	— ^b	4.46	5.29	9.38
90	1.0	F	4.60	13.94	17.48	30.10
90	3.5	D	1.45	5.99	7.80	12.55
115	1.0	F	5.76	16.63	20.77	36.30
115	3.5	D	2.20	7.45	9.02	14.63

^a Stability classes are defined as follows: D = neutral conditions; F = stable conditions.

^b The SCREEN3 Model did not calculate ammonia concentrations this high.

Under the worst-case release scenario, concentrations of ammonia from the GWF Tracy site are estimated to fall below 75 ppm at approximately 36.30 meters (119 feet) from the truck unloading area, and does not extend offsite. Under the "plausible" alternative release scenario, which would occur under more realistic conditions (higher wind speed but lower temperatures), concentrations of ammonia at 75 ppm extend only 12.55 meters (41 feet) from the truck unloading area.

Since the general public will not be exposed to ammonia concentrations above 75 ppm during a worst-case release scenario, the storage of aqueous ammonia onsite will not pose a significant risk to the public. (GWF, 2001).

5.5.4.4 Fire and Explosion Risk

Table 5.5-3 describes the flammability for the hazardous materials that will be onsite. Article 80 of the California Fire Code requires all hazardous materials storage areas to be equipped with a fire extinguishing system and also requires ventilation for all enclosed hazardous material storage areas.

Aqueous ammonia, which constitutes the largest quantity of hazardous materials stored on site, is incombustible in its liquid state. Under normal storage conditions, ammonia would not evaporate to the atmosphere because it is contained in a sealed tank that maintains the ammonia in a state that precludes evaporation. In the unlikely event that a release were to occur, ammonia could evaporate directly to the atmosphere. Ammonia vapor is combustible only within a narrow range of concentrations in air. The evaporation rate of aqueous ammonia is similar to water, which is sufficiently low such that the lower explosive limit of 15 percent (or 15,000 ppm) will not be reached.

The plant machinery lubrication oil is flammable. In accordance with Article 80 of the California Fire Code, the storage area for the lubrication oil would be equipped with a fire-extinguishing system, and the lubrication oil is currently handled in accordance with an HMBP approved by the County of San Joaquin Environmental Health Department jointly with the Tracy Fire Department and the CEC. With proper storage and handling of flammable materials in accordance with the California Fire Code and the site-specific HMBP, the risk of fire and explosion at the generating facility would be minimal. The HMBP will be updated with any new chemicals brought on site as a result of the GWF Tracy project.

The natural gas fuel GWF Tracy will use is flammable and could leak from the pipeline that brings the gas from the main gas distribution pipeline that is currently in place for the facility. Natural gas is composed mostly of methane, but also may contain ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and is lighter than air. Methane is flammable when mixed in air at concentrations of 5 to 14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and explosion if an accidental release were to occur. However, the risk of a fire and/or explosion would be reduced through compliance with applicable codes, regulations, and industry design/construction standards.

The federal safety and operating requirements for natural gas pipelines are contained in Title 49 of the CFR, Parts 190 through 192. These requirements vary according to population density and land use; the pipeline classes are defined as follows:

- Class 1 includes pipelines in locations with 10 or fewer buildings intended for human occupancy.
- Class 2 includes pipelines in locations with more than 10, but fewer than 46 buildings intended for human occupancy.
- Class 3 includes pipelines in locations with more than 46 buildings intended for human occupancy, or where the pipeline is within 100 yards of any building or small well-defined outside area occupied by 20 or more people on at least 5 days per week for 10 weeks in any 12-month period.
- Class 4 includes pipelines in locations where buildings with 4 or more stories above ground are prevalent.

The project's pipeline will use the TPP's existing natural gas pipeline connector. This pipeline is designed to meet Class 3 service and meets CPUC General Order 112-E and 58-A standards, in addition to the federal requirements for gas pipeline construction and safety.

Oxidizers will be stored on site that could contribute to a fire or explosion hazard. This includes oxygen in compressed gas cylinders. This material will be segregated from flammables and combustibles during storage.

The Tracy Fire Department, which will service GWF Tracy, has a total of eight fire stations. The nearest fire stations to the project site, Station Nos. 94 and 97, are located at 16502 W. Schulte Road, Tracy, California (approximately 1 mile west of GWF Tracy) and at 595 West Central Avenue, Tracy, California (approximately 5 miles east of GWF Tracy), respectively (Garcia, 2008).

The Tracy Fire Department does not have a Hazardous Materials Station; however, the Fire Department employs many firefighters who are hazardous materials trained specialists. The Tracy Fire Department has a Hazardous Materials Team headed by Fire Captain Mark Richardson in Station No. 96, located at 301 West Grant Line Road, Tracy, California, approximately 9 miles northeast of GWF Tracy. The Tracy Fire Department would be the initial responder to assess a hazardous materials accident.

5.5.5 Cumulative Effects

A cumulative impact refers to a project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Pub. Resources Code § 21083; CCR tit. 14, §§ 15064(h), 15065(c), 15130, and 15355).

There are few projects within the City of Tracy and San Joaquin County that are adjacent to the GWF Tracy site and that may have a cumulative effect on GWF Tracy. Refer to Section 5.6, Land Use, for a more detailed discussion of cumulative projects.

Existing laws and regulations address the handling of hazardous materials and the transportation and use of aqueous ammonia, an acutely hazardous material, and will

regulate safe hazardous materials management at GWF Tracy. There are several nearby facilities that may have the potential to use and store regulated substances, such as ammonia, in quantities large enough to warrant an RMP, however impacts from an ammonia spill from GWF Tracy all remain on site. Therefore, there is a very low potential for the cumulative ammonia impacts for a simultaneous ammonia release from GWF Tracy and these other facilities to cause a significant impact. Existing laws and regulations will thus ensure that the proposed project's incremental effect is not cumulatively considerable.

5.5.6 Mitigation Measures

The following sections present measures that the Applicant would implement during project construction and operation phases to mitigate risks in handling hazardous materials, particularly the risk of inadvertent spills or leaks that might pose a hazard to human health or the environment.

5.5.6.1 Construction Phase

The hazardous materials that would be used during project construction present a relatively low public health risk, but could contaminate surface water or groundwater if a release occurred. Use of BMPs would reduce the potential for the release of construction-related fuels and other hazardous materials to storm water and receiving waters as discussed in Section 5.15, Water Resources. BMPs prevent sediment and storm water contamination from spills or leaks, control the amount of runoff from the GWF Tracy site, and require proper disposal or recycling of hazardous materials.

Construction service personnel will follow general industry health, safety, and environmental standards for filling and servicing construction equipment and vehicles. The standards are designed to reduce the potential for incidents involving the hazardous materials. They include the following:

- Refueling and maintenance of vehicles and equipment will occur in designated areas that are equipped with spill control features (e.g., berms, paved surfaces, spill response kits, etc.).
- Vehicle and equipment service and maintenance will be conducted by authorized personnel only.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans will be placed under equipment to catch potential spills during servicing.
- All disconnected hoses will be placed in containers to collect residual fuel from the hose.
- Vehicle engines will be shut down during refueling.
- No smoking, open flames, or welding will be allowed in refueling or service areas.
- Refueling will be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- When refueling is completed, the service truck will leave the project site.

- Service trucks will be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Should a spill contaminate soil, the soil will be put in containers for offsite disposal as a hazardous waste. All containers used to store hazardous materials will be inspected at least once per week for signs of leaking or failure.
- All maintenance and refueling areas will be inspected monthly. Results of inspections will be recorded in a logbook that will be maintained onsite.

In the unlikely event of a spill, the spill may need to be reported to the appropriate regulatory agencies and cleanup of contaminated soil could be required. Small spills will be contained and cleaned up immediately by trained, onsite personnel. Larger spills will be reported via emergency phone numbers to obtain help from offsite containment and cleanup crews. Personnel working on the project during the construction phase will be trained in handling of and the dangers associated with hazardous materials. An onsite health and safety person will be designated to implement health and safety guidelines and contact emergency response personnel and the local hospital, if necessary.

If there is a large spill from a service or refueling truck, contaminated soil will be placed into barrels or trucks by service personnel for offsite disposal at an appropriate facility in accordance with law. If a spill involves hazardous materials quantities equal to or greater than the specific RQ (42 gallons for petroleum products), all federal, state, and local reporting requirements will be followed. In the event of a fire or injury, the local fire department will be called.

5.5.6.2 Operation Phase

During GWF Tracy operations, various hazardous materials and one regulated substance will be stored onsite as shown in Table 5.5-1. Table 5.5-2 presents information about these materials, including trade names, chemical names, CAS numbers, maximum quantities onsite, RQs, CalARP TPQs, and status as a Proposition 65 chemical (a chemical known to be carcinogenic or cause reproductive problems in humans). Health hazards and flammability data are summarized for these materials in Table 5.5-3, which also contains information on incompatible chemicals. Table 5.5-4 describes the toxicity of the regulated substance and hazardous materials. Listed below are mitigation measures for minimizing the public health risks associated with hazardous material and regulated substance handling during facility operation.

5.5.6.3 Aqueous Ammonia

Aqueous ammonia will be used in a selective catalytic reduction (SCR) process to control NO_x emissions created in the combustion chambers of the combustion turbines. The SCR system will include catalyst modules, an ammonia storage system, and an ammonia injection system. The aqueous ammonia, stored as a liquid solution of 29.5 percent ammonia and 70.5 percent water, will be injected into the turbine exhaust housing upstream of the catalyst modules. The rate of injection will be controlled by a monitoring system that uses sensors to determine the correct quantity of ammonia to feed to the injection system.

The aqueous ammonia will be delivered to the GWF Tracy site by one 6,700-gallon tanker truck, one to three times per month, with a maximum of five trucks per month during peak

operation. The ammonia will be stored in existing storage tank with a 9,000-gallon capacity, contained within a secondary containment system, as required by the Uniform Fire Code. This containment system includes a bermed containment area surrounding the tank. The aqueous ammonia storage tank will be equipped with continuous tank level monitors, automated leak detection system, temperature and pressure monitors and alarms, and excess flow and emergency block valves. The TPP ammonia unloading area design includes a below-grade tank to collect any accidental ammonia releases during unloading. This project feature will continue to be in service when the combined-cycled plant is in operation.

Ammonia is a regulated substance under the federal CAA pursuant to 40 CFR 68 (Subpart G) and the CalARP pursuant to Health and Safety Code Sections 25331 through 25543.3. The California program is similar to the federal program but is more stringent in some areas.

In accordance with CalARP regulations, an RMP has been prepared for the existing TPP ammonia tank. The RMP includes a hazard assessment to evaluate the potential effects of an accidental release, a program for preventing an accidental release, and a program for responding to an accidental release. The specific components of the RMP include:

- Description of the facility
- Accident history of the facility
- History of equipment used at the facility
- Design and operation of the facility
- Site map(s) of the facility
- Piping and instrument diagrams of the facility
- Seismic analysis
- Hazard and operability study
- Prevention program
- Consequence analysis
- Offsite consequence analysis
- Emergency response
- Auditing and inspection
- Record keeping
- Training
- Certification

The RMP has been filed with the County of San Joaquin Environmental Health Department, the designated CUPA for the project site. The RMP covers regulated substances that can produce toxic clouds when inadvertently released. The RMP includes a hazard assessment to evaluate the potential effects of accidental releases; a program for preventing accidental releases; and a program for responding to accidental releases to protect human health and the environment.

A Process Safety Management (PSM) plan will not be required under OSHA, because the OSHA regulations apply only to aqueous ammonia solutions above 44 percent (29 CFR Part 199). The requirements for a PSM plan are very similar to those for an RMP although an OCA is not required for the PSM. The RMP may be sufficient to also meet the requirements of a PSM plan, if required.

5.5.6.4 Other Hazardous Materials

All hazardous materials will be handled and stored in accordance with applicable codes and regulations specified in Section 5.5.6. Specific requirements of the California Fire Code that reduce the risk of fire or the potential for a release of hazardous materials that could affect public health or the environment include:

- Provision of an automatic sprinkler system for indoor hazardous material storage areas.
- Provision of an exhaust system for indoor hazardous material storage areas.
- Separation of incompatible materials by isolating them from each other with a noncombustible partition.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment is required to hold the entire contents of the tank plus the volume of water for the fire suppression system that could be used for fire protection for a period of 20 minutes in the event of a catastrophic spill.

In addition, an HMBP is required by CCR Title 19 and the Health and Safety Code (Section 25504). The TPP has an existing HMBP which will be revised to include all chemicals on site, an updated location map of hazardous materials onsite and an updated emergency response plan for hazardous materials incidents. Specific topics currently addressed in the plan include:

- Facility identification
- Emergency contacts
- Chemical inventory information (for every hazardous material)
- Site map
- Emergency notification data
- Procedures to control actual or threatened releases
- Emergency response procedures
- Training procedures
- Certification

The revised HMBP will be filed with the County of San Joaquin Environmental Health Department, the designated CUPA for the project site, and will be updated annually in accordance with applicable regulations.

In accordance with emergency response procedures specified in the HMBP, designated personnel will be trained as members of a plant hazardous material response team, and team members will receive the first responder and hazardous material technical training to be developed in the HMBP, including training in appropriate methods to mitigate and control accidental spills. For emergency spills, the City of Tracy Fire Department has firefighters trained to a Hazardous Materials Specialist level who have completed formal training in Hazardous Materials Incident Response. The HazMat Team will identify the type and source of the hazardous material, oversee evacuation of people, and confine the spilled material, if possible. Cleanup of the material is the responsibility of the facility causing the spill. The nearest fire stations to the project site are Station Nos. 94 and 97 are located at

16502 W. Schulte Road, Tracy, California (approximately 1 mile west of GWF Tracy) and at 595 West Central Avenue, Tracy, California (approximately 5 miles east of GWF Tracy), respectively (Garcia, 2008).

5.5.6.5 Transportation/Delivery of Hazardous Materials

Hazardous materials and one regulated substance will be delivered periodically to the facility. As discussed in Section 5.12, Traffic and Transportation, transportation of hazardous materials will comply with all California Department of Transportation, EPA, DOT, Department of Toxic Substance Control, CHP, and California State Fire Marshal regulations. Under the California Vehicle Code, the CHP has the authority to adopt regulations for transporting hazardous materials in California. The CHP can issue permits and specify the route for hazardous material delivery. Aqueous ammonia, a regulated substance, will be delivered to the GWF Tracy site, and transported in accordance with Vehicle Code Section 32100.5, which regulates the transportation of hazardous materials that pose an inhalation hazard. In addition, ammonia will only be transported along approved transportation routes.

5.5.6.5.1 Petroleum Products

Federal and California regulations require an SPCC Plan if petroleum products above certain quantities are stored in ASTs. Both federal and state laws apply only to petroleum products that might be discharged to navigable waters. If stored quantities are equal to or greater than 660 gallons for a single tank, or equal to or greater than 1,320 gallons total, an SPCC Plan must be prepared. The key elements of an SPCC Plan are:

- Name, location, and telephone number of the facility
- Spill record of the facility and lessons learned
- Analysis of the facility, including:
 - Description of the facilities and engineering calculations
 - Map of the site
 - Storage tanks and containment areas
 - Fuel transfer and storage and facility drainage
 - Prediction and prevention of potential spills
- Spill response procedures
- Agency notification
- Personnel training and spill prevention

GWF Tracy will store more than 1,320 gallons of oil-containing materials on site. The nearest waterway is the Delta-Mendota Canal, which is approximately 100 feet southwest of the project site. The TPP project has an existing SPCC plan which will be updated with any revised or new quantities of petroleum products for GWF Tracy.

5.5.6.5.2 Security Plan

In addition to standard industrial business security measures, the Applicant will be preparing a security plan that will include the following elements:

- Descriptions of the site fencing and security gate
- Evacuation procedures
- A protocol for contacting law enforcement in the event of conduct endangering the facility, its employees, its contractors, or the public
- A fire alarm monitoring system
- Measures to conduct site personnel background checks, including employee and routine onsite contractors consistent with state and federal law regarding security and privacy
- A site access protocol for vendors
- A protocol for hazardous materials vendors to prepare and implement security plans as per 49 CFR 172.800 and to ensure that all hazardous materials drivers are in compliance with personnel background security checks as per 49 CFR Part 172, Subpart I

The plan will also include a demonstration that the perimeter security measures will be adequate. The demonstration may include one or more of the following:

- Security alarm for critical structures
- Perimeter breach detectors and onsite motion detectors
- Video or still camera monitoring system

5.5.6.5.3 Proposition 65

The facility will use lubricating and turbine oils and diesel fuel. These materials are included in the State of California's Prop 65 list of chemicals known to the state to cause cancer. The site will be appropriately labeled for all chemicals on the Proposition 65 list.

5.5.6.6 Monitoring

In accordance with applicable federal, state, and local regulations, site personnel would regularly inspect all hazardous materials handling facilities for compliance with applicable regulations and would ensure that any deficiencies were promptly repaired. In addition, the facility would be subject to regular inspections by the Tracy Fire Department and the County of San Joaquin Environmental Health Department, which would ensure compliance with appropriate regulatory requirements for hazardous materials and regulated substances handling.

5.5.7 Agencies and Agency Contacts

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at GWF Tracy. At the federal level, EPA will be involved; at the state level, the California Environmental Protection Agency will be involved. However, local agencies primarily enforce hazardous materials laws. For GWF Tracy the primary local agencies with jurisdiction will be the County of San Joaquin Environmental Health Department and the City of Tracy Fire Department. The persons to contact at the local agencies are shown in Table 5.5-8.

TABLE 5.5-8
Agency Contacts for Hazardous Materials Handling

Issue	Agency	Contact
CUPA for Hazardous Materials Inventory and Emergency Business Plan, and Risk Management Plan (Foley, 2008)	County of San Joaquin, Environmental Health Department, Office of Emergency Services 222 E. Weber Ave. Stockton, CA 95202	Casey Foley (209) 468-3451
Fire Department Permits	City of Tracy Fire Department, Hazardous Materials Response Unit Station No. 96 301 West Grant Line Road Tracy, CA 95367	Mark Richardson, Fire Captain (209) 831-6700
Hazardous Materials Response	City of Tracy Fire Department, Hazardous Materials Response Unit Station No. 96 301 West Grant Line Road Tracy, CA 95367	Mark Richardson, Fire Captain (209) 831-6700
Central Valley Regional Water Quality Control Board	11020 Sun Center Drive, #200 Rancho Cordova, CA 95670 (916) 464-3291	Jim Marshall San Joaquin and Delta Permitting, SPCC (916) 255-3000

5.5.8 Permits and Permit Schedule

The County of San Joaquin Environmental Health Department requires the permits listed in Table 5.5-9 to be obtained before hazardous materials are stored on site.

TABLE 5.5-9
Permits and Permit Schedule for Hazardous Materials Handling

Permit	Agency Contact	Schedule
Hazardous Materials Inventory and Emergency Business Plan	County of San Joaquin Environmental Health Department Michelle Henry 600 E. Main Street Stockton, CA 95202 (209) 953-7699	30 Days prior to start of operations
California Accidental Release Prevention Program http://www.oes.ca.gov/Operational/OESHome.nsf/978596171691962788256b350061870e/452A4B2AF244158788256CFE00778375?OpenDocument (Risk Management Plan)	CA Office of Emergency Services, Local Emergency Planning Committee, Region IV3650 Schriever Ave. Mather, CA 95655 Dana Owens OES Inland Region(916) 845-8482 dana.owens@oes.ca.gov	90 days prior to start to operations

5.5.9 References

Environmental Data Resource Inc. (EDR). 2008. EDR Offsite Receptor Report. Tracy Peaker Site S of Southern Pacific Railroad, Tracy, CA. March 07, 2008.

Foley, C. 2008. Telephone conversation with Casey Foley, Supervisor, County of San Joaquin Environmental Health Department and Andrew Redmond/CH2M HILL. February.

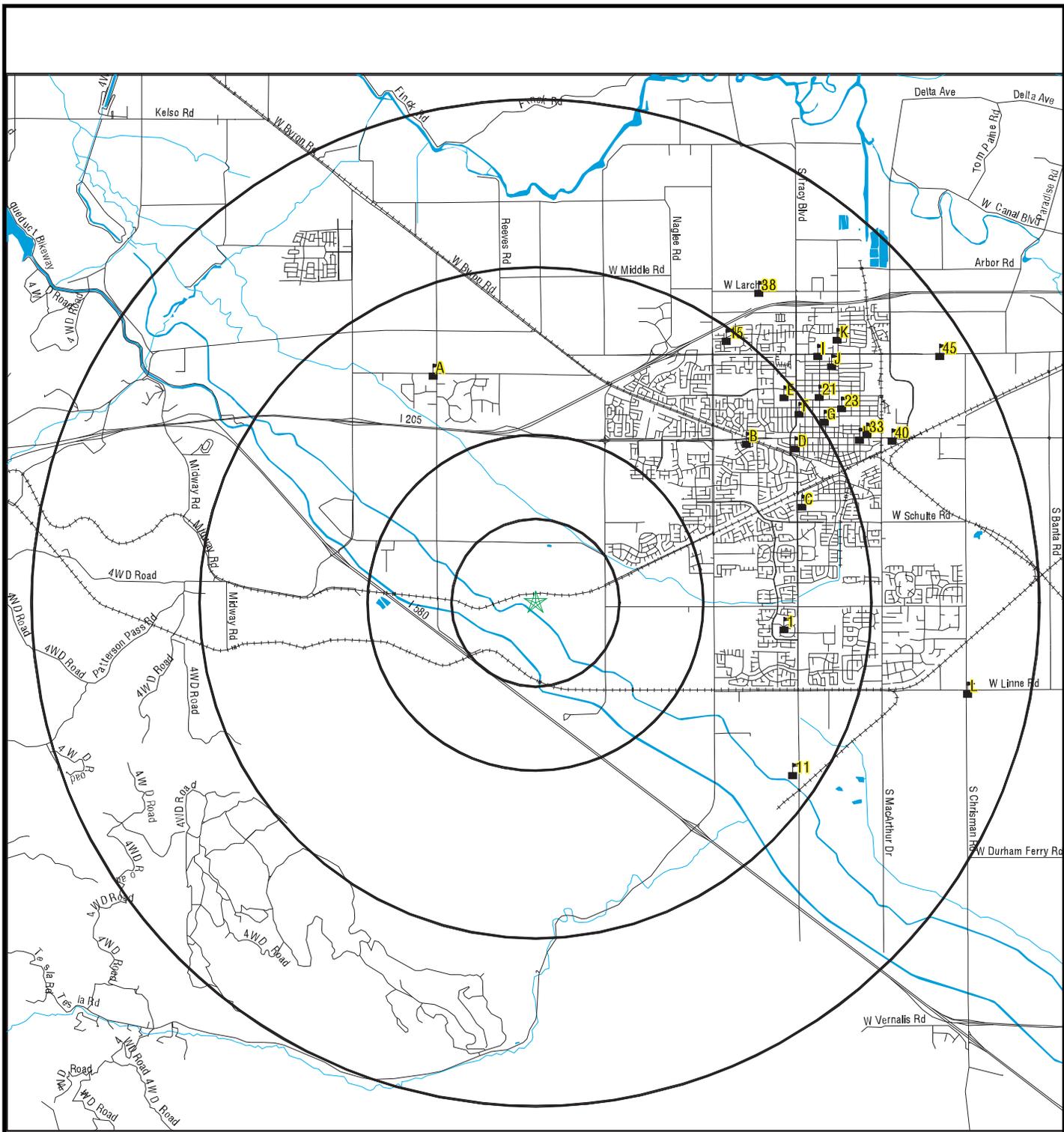
Garcia, S. 2008. Telephone conversation with Stephanie Garcia, Tracy Fire Department and Andrew Redmond/CH2M HILL. January.

GWF Energy (GWF). 2001. *Geological Hazards and Resources for the Tracy Peaker Plant*. Contained within the Application for Certification submitted to the California Energy Commission. August.

Lewis, R.J. Sr. 1991. *Hazardous Chemical Desk Reference*, 2nd Edition.

U.S. Department of Health and Human Services, Public Health Service Centers for Disease Control. National Institute for Occupational Safety and Health. 1990. NIOSH Pocket Guide to Chemical Hazards.

U.S. Environmental Protection Agency (EPA). 1999. RMP Offsite Consequence Analysis Guidance. April.



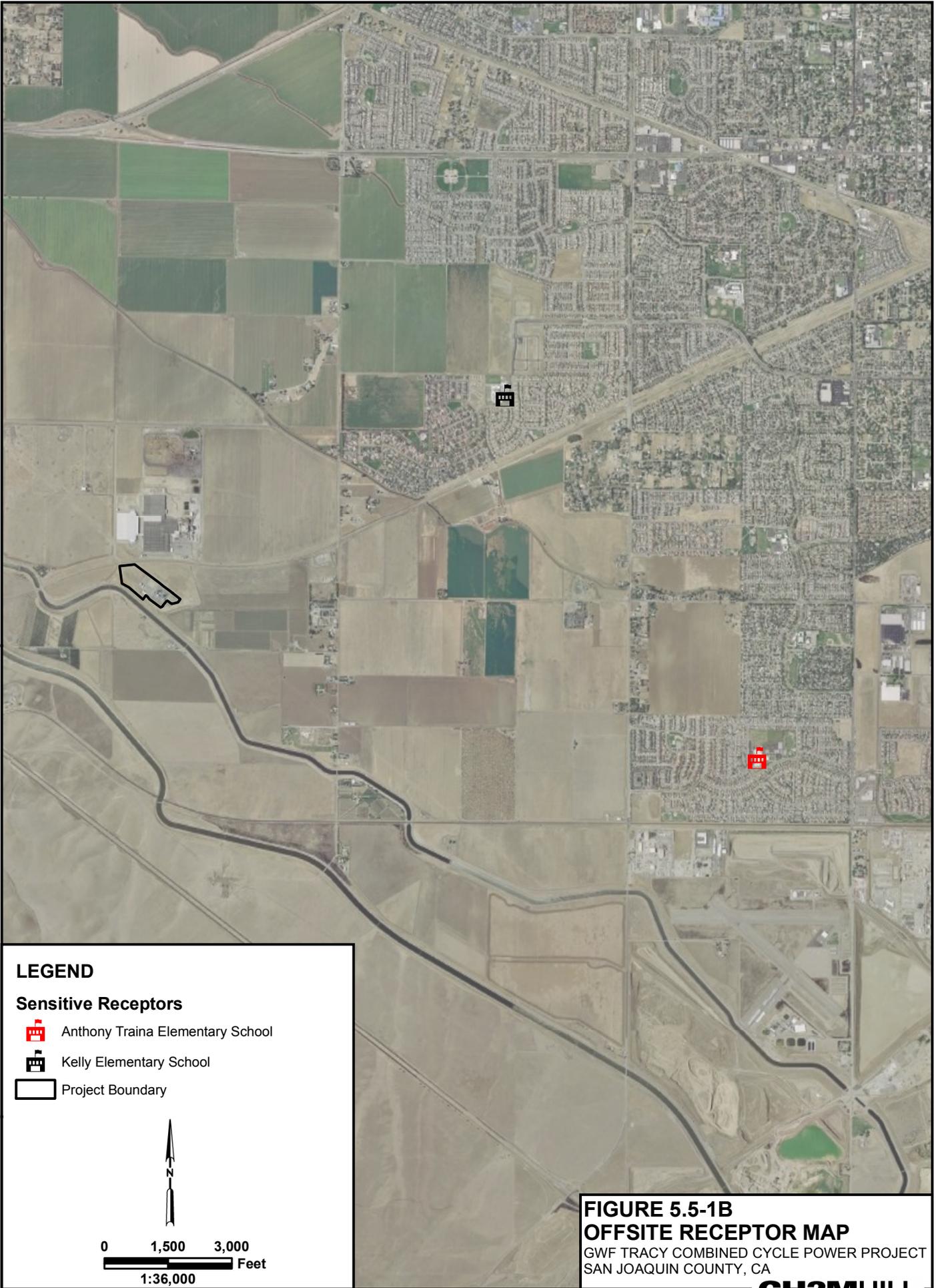
- ★ Target Property
- ▬ Roads
- ▬ Waterways
- Environmental or Public Receptor
- ▬ Federal Lands Linear Features
- ▬ Federal Lands Area



FIGURE 5.5-1a
OFFSITE RECEPTOR MAP
 GWF TRACY COMBINED CYCLE POWER PLANT PROJECT
 SAN JOAQUIN COUNTY, CA

Source: Offsite Receptor Report, Environmental Data Resources, Inc., March 2008





SAFETY EQUIPMENT LEGEND:

☒=SAFETY SHOWER

◆=HAZARDOUS MATERIAL STORAGE

EQUIPMENT LIST		EQUIPMENT LIST		EQUIPMENT LIST		EQUIPMENT LIST	
ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	INLET AIR FILTER EXISTING	21	NOT USED	41	POTABLE WATER TREATMENT SKID EXISTING	106	SCR SKID
2	ACCESSORY COMPARTMENT EXISTING	22	FUEL GAS HEATER SKID EXISTING	42	SERVICE/FIRE WATER STORAGE TANK EXISTING	107	DUCT BURNER SKID
3	COMBUSTION TURBINE 7EA EXISTING	23	GSU TRANSFORMER EXISTING	43	SERVICE WATER FORWARDING PUMPS EXISTING	108	STEAM TURBINE
4	EXHAUST PLENUM EXISTING	24	GSU SWITCHYARD EXISTING	44	FIRE PROTECTION PUMPS REWORKED	109	STEAM TURBINE GENERATOR
5	GENERATOR EXISTING	25	OIL/WATER SEPARATOR (UNDERGROUND) EXISTING	45	EMERGENCY DIESEL GENERATOR EXISTING	110	GENERATOR ROTOR REMOVAL
6	SWITCHGEAR COMPARTMENT EXISTING	26	AQUEOUS AMMONIA STORAGE TANK EXISTING	46	RAW WATER TREATMENT SKID EXISTING	111	ST LUBE OIL RESERVOIR
7	LUBE OIL DEMISTER EXISTING	27	AQUEOUS AMMONIA FORWARDING PUMPS EXISTING	47	AIR COMPRESSORS EXISTING	112	GLAND CONDENSER
8	GAS VALVE MODULE EXISTING	28	NOT USED	48	AIR DRYERS EXISTING	113	ST STEP-UP TRANSFORMER
9	NOT USED	29	WASTE WATER STORAGE TANK (UNDERGROUND) EXISTING	49	LONG TERM MIXING BEDS EXISTING	114	ST AUXILIARY TRANSFORMER
10	NOT USED	30	CRANKING MOTOR STARTER TRANSFORMER/SWITCHGEAR EXISTING	50	DEMIN BOTTLE EXISTING	115	ST GENERATOR BREAKER
11	EXHAUST FRAME BLOWERS EXISTING	31	GAS METERING STATION (BY OWNER) EXISTING	51	AIR RECEIVER EXISTING	116	ST GENERATOR EXCITATION COMPARTMENT
12	CO2 FIRE PROTECTION SKID EXISTING	32	SPILL CONTAINMENT STORAGE TANK (UNDERGROUND) EXISTING	52	SUBSTATION EXISTING	117	ST ISOLATED PHASE BUS DUCT
13	WATER WASH DRAINS TANK (UNDERGROUND) EXISTING	33	PIPE TRENCH EXISTING	53	RETENTION BASIN RELOCATED	118	NON-SEGREGATED BUS DUCT
14	WATER WASH SKID EXISTING	34	UNIT 1 AUXILIARY TRANSFORMER EXISTING	54	SEPTIC TANK FIELD EXISTING	119	MEDIUM VOLTAGE SWITCHGEAR
15	PEECC EXISTING	35	UNIT 2 AUXILIARY TRANSFORMER EXISTING	55	GSU SWITCHYARD CONTROL BUILDING EXISTING	120	SECONDARY UNIT SUBSTATION
16	NOT USED	36	SWITCHGEAR EXISTING	101	HRSG	121	PIPE RACK
17	AIR PROCESSING UNIT EXISTING	37	RAW WATER FORWARDING PUMPS EXISTING	102	HRSG STACK	122	WATER TREATMENT
18	FUEL GAS SCRUBBER EXISTING	38	EVAPORATIVE COOLER BLOWDOWN TANK EXISTING	103	BOILER FEED PUMPS	123	CONDENSATE STORAGE TANK
19	FUEL GAS SCRUBBER DRAINS TANK EXISTING	39	EVAPORATIVE COOLER BLOWDOWN FORWARDING PUMPS EXISTING	104	BOILER BLOWDOWN TANK	124	STEAM DUCT
20	COOLING WATER MODULE EXISTING	40	ADMIN/MAINTENANCE BUILDING EXISTING	105	CEM EQUIPMENT/ENCLOSURE	125	AIR COOLED CONDENSER
						126	AUXILIARY BOILER & STACK
						127	D.I. TRAILERS
						128	MAINTENANCE PARKING
						129	SERVICE/FIRE WATER STORAGE TANK
						130	FIRE WATER STORAGE TANK
						131	S.T.CLOSED CYCLE COOLING UNIT

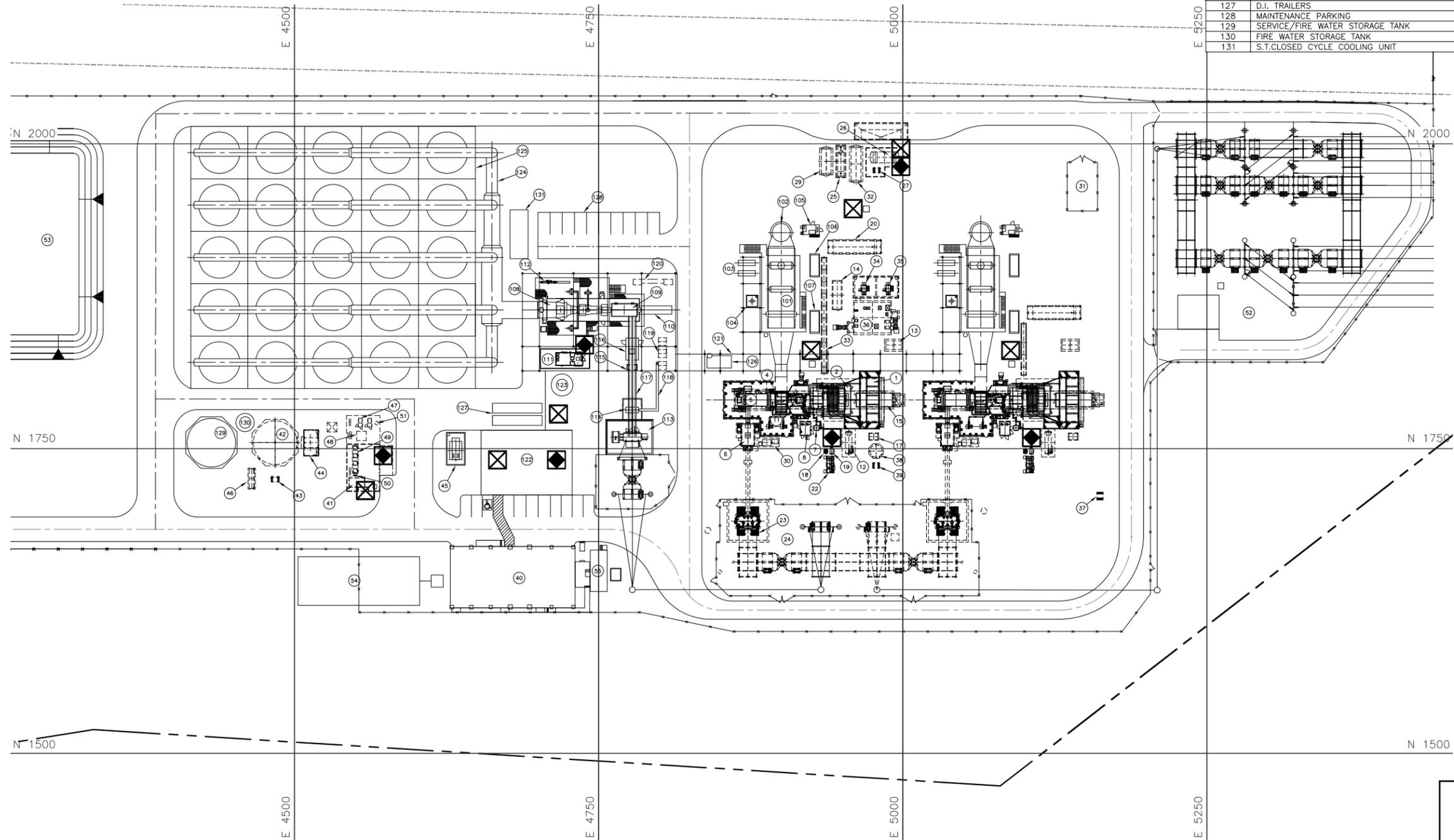
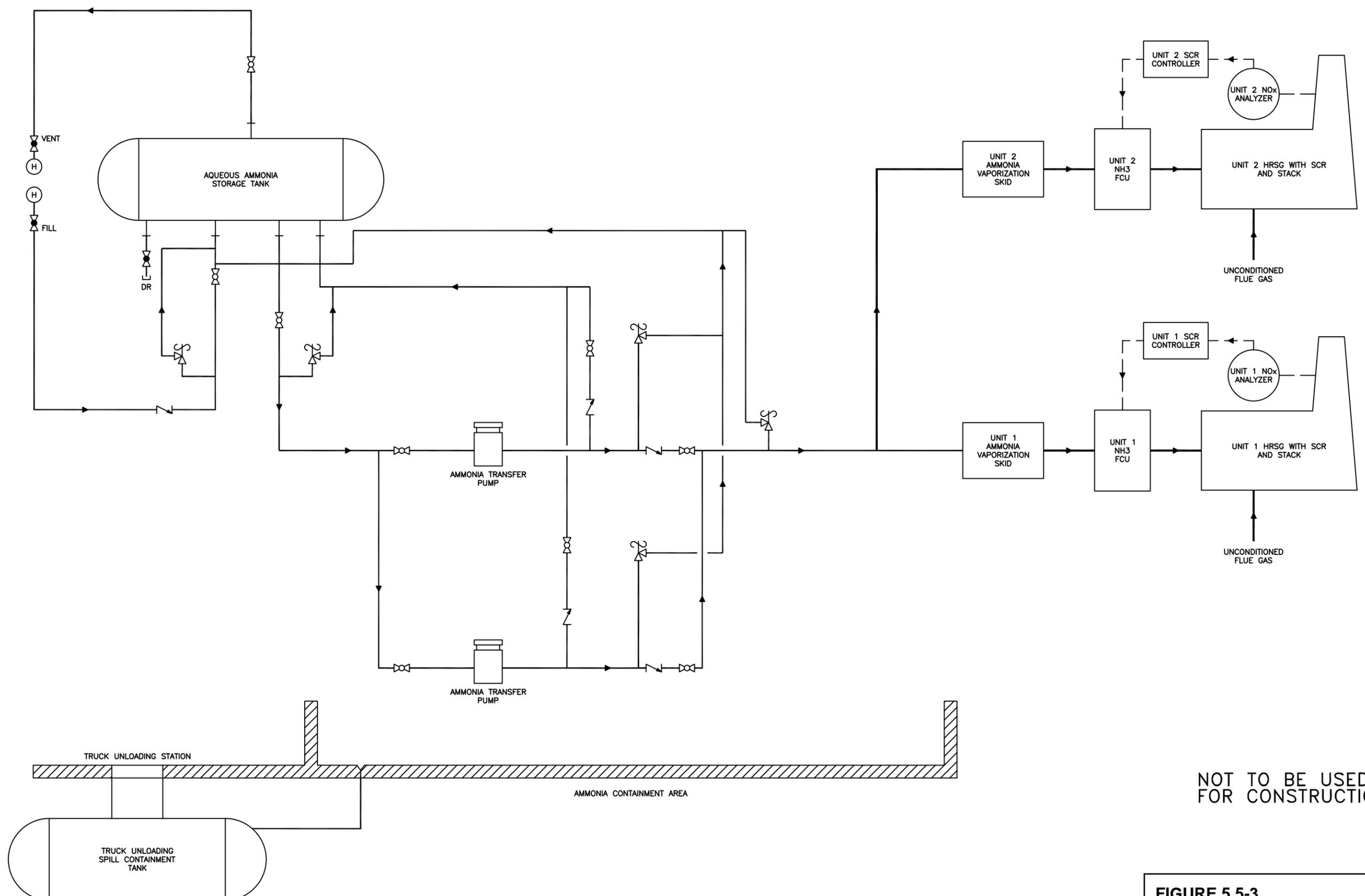


Figure source: Black & Veatch Corporation, Drawing Number 160129-HAZM-M1001

NOT TO BE USED FOR CONSTRUCTION

FIGURE 5.5-2
PLANT GENERAL ARRANGEMENT
HAZARDOUS MATERIALS
 GWF TRACY COMBINED CYCLE
 POWER PLANT PROJECT
 SAN JOAQUIN COUNTY, CA



NOT TO BE USED FOR CONSTRUCTION

FIGURE 5.5-3
PIPING AND INSTRUMENT DIAGRAM
AQUEOUS AMMONIA SYSTEM
 GWF TRACY COMBINED CYCLE
 POWER PLANT PROJECT
 SAN JOAQUIN COUNTY, CA

Figure source: Black & Veatch Corporation, Drawing Number 160129-CCGU-M2206