6.7 HAZARDOUS MATERIAL HANDLING

This section addresses potential impacts from the handling of hazardous materials during construction and operation of the VV2 Project.

6.7.1 LORS Compliance

Design, construction and operation of the VV2 Project will be conducted in accordance with all LORS pertinent to hazardous materials handling. The applicable Federal, State, and local LORS are summarized in Table 6.7-1 and in text following the table.

Table 6.7-1
Summary of Hazardous Materials LORS Applicable to VV2 Project

<table>
<thead>
<tr>
<th>Authority</th>
<th>Requirement</th>
<th>Where Addressed in AFC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERCLA, 42 USC §9601 et seq. 40 CFR Part 302</td>
<td>Notification for Hazardous Substance Release</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td>EPCRA, 42 USC §11001 et seq. 40 CFR Parts 350, 355, and 370</td>
<td>Inventory, planning and reporting for hazardous and acutely hazardous materials</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td>40 CFR Part 68</td>
<td>Risk Management Plan</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td>40 CFR 112</td>
<td>Spill Prevention Control and Countermeasures Plan</td>
<td>Section 6.17</td>
</tr>
<tr>
<td>29 USC § 65129; 29 CFR § 1910 et seq. and § 1926 et seq.</td>
<td>Equipment standards for hazardous materials storage, handling, and worker protection in emergencies</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Health and Safety Code § 25500 to 25541; 19 CCR §§ 2720-2734.</td>
<td>Inventory, planning and reporting for hazardous and acutely hazardous materials</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td>8 CCR § 339; § 3200 et seq., 5139 et seq. and 5160 et seq.</td>
<td>Listing and control of hazardous substances</td>
<td>Section 6.7.4</td>
</tr>
<tr>
<td>California Health &amp; Safety Code Section 25531 et seq., CCR Title 19, Division 2, Chapter 4.5 (CalARP Program)</td>
<td>Risk Management Plan</td>
<td>Section 6.7.1</td>
</tr>
</tbody>
</table>
Table 6.7-1

Summary of Hazardous Materials LORS Applicable to VV2 Project

<table>
<thead>
<tr>
<th>Authority</th>
<th>Requirement</th>
<th>Where Addressed in AFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality Order 97-03-DWQ, General Permit CAS000001</td>
<td>Storm Water Pollution Prevention Plan</td>
<td>Section 6.17</td>
</tr>
</tbody>
</table>

**Industry Codes and Standards**

<table>
<thead>
<tr>
<th>ASME, ANSI, and ASTM</th>
<th>Standards for power plant design</th>
<th>Sections 2.0, 6.7.3, 6.7.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniform Fire Code, Articles 79, 80, and others</td>
<td>Storage and handling of hazardous materials</td>
<td>Sections 2.0, 6.7.3, 6.7.4</td>
</tr>
<tr>
<td>NFPA</td>
<td>Fire prevention standards and guidelines.</td>
<td>Sections 2.0, 6.7.3, 6.7.4</td>
</tr>
</tbody>
</table>

### 6.7.1.1 Federal

The Federal LORS applicable to the handling and storage of hazardous materials are discussed below and listed in Table 6.7-1.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund), 42 USC Section 9601 et seq. 40 Code of Federal Regulations (CFR) 302, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (SARA Title 111). 42 USC Section 11001 et seq.; 40 CFR Parts 350, 355 and 370. CERCLA prescribes that the National Response Center be notified for any release of a reportable quantity of a hazardous substance (42 USC Section 9603); notification requirements for any potentially injured parties in connection with any such release (42 USC Section 9611 (g)); and requirements for demonstration of financial responsibility in connection with the storage of hazardous substances (42 USC Section 9608(b)).

Superfund regulations define “hazardous substance” as any material appearing in lists referenced in 42 USC Section 9601(14)(Section 101). EPA’s regulations codified at 40 CFR 302.4, Table 3.2-4, set forth the list of hazardous substances under CERCLA and the reportable quantities for each.

Superfund Amendment and Reauthorization Act (SARA) Title III established a nationwide emergency planning and response program and imposed reporting requirements for businesses, which store, handle, or produce significant quantities of
hazardous or acutely hazardous material above specified threshold quantities. It requires States to implement a comprehensive system to inform Federal authorities, local agencies, and the public when a significant quantity of hazardous or acutely hazardous material is stored or handled at a facility. In California, many of the requirements of SARA are reflected in Chapter 6.95 of the California Health and Safety Code.

The project will conform to these requirements by developing a Hazardous Materials Business Plan (HMBP). The administering agencies for the above authority are the U.S. Environmental Protection Agency (EPA) Region IX, the National Response Center, and the City of Victorville Fire Department. The City of Victorville Fire Department is a Certified Unified Program Agency (CUPA).

The Risk Management Program under 40 CFR Part 68 requires the preparation of a Risk Management Plan (RMP) if certain listed toxic or flammable substances are used in excess of the listed threshold quantity. The RMP addresses in detail the emergency prevention implemented at the facility and the response actions planned by the facility in the event of a hazardous materials release. The RMP is based on studies identifying potential hazards associated with the handling of the listed materials proposed for use at the facility. California has developed its own program (California Accidental Release Prevention [CalARP] Program) that generally mirrors the Federal RMP program (see below). For those aspects of the California program that differ from the Federal program, California’s program is more stringent. The administering agencies are EPA and the City of Victorville Fire Department.

29 USC Section 65129; 29 CFR 1910 et seq. and 1926 et seq., requires employee training, personal protective equipment, safety equipment, and written procedures, programs and plans for insuring worker safety when working with hazardous materials or hazardous work environments. Although intended primarily to protect worker health and safety, these requirements affect general facility safety.

In 1992, the Department of Labor Occupational Safety and Health Administration (OSHA) issued rules for Process Safety Management of Highly Hazardous Chemicals (29 CFR 1910.119) which address the prevention of catastrophic accidents. The rule requires companies handling hazardous substances in excess of specific threshold amounts to develop and implement a process safety management (PSM) plan. The requirements of the PSM rule are directed primarily at protecting workers within the facility. A PSM plan generally mirrors the RMP required under 40 CFR 68. The VV2 Project plans to use aqueous ammonia (ammonia concentration of approximately 19 percent), which is well below the OSHA 44-percent concentration that triggers PSM
requirements; thus, a PSM plan is not required for the VV2 Project. The administering agency for these requirements is Federal OSHA.

The Spill Prevention Control and Countermeasures (SPCC) regulations codified under 40 CFR Part 112 will apply to the VV2 Project. The SPCC regulations place restrictions on the management of petroleum materials and, therefore, have some bearing on hazardous materials management (also see 6.17, Waste Management).

6.7.1.2 State

Applicable State of California LORS are summarized below.

The Code of California Regulations (CCR) 8 CCR Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq. 8 CCR Section 339 list hazardous chemicals relating to Hazardous Substance Information and Training Act (HSITA); 8 CCR Section 3200 et seq. and 5139 et seq. address control of hazardous substances; 8 CCR Section 5160 et seq. address hot, flammable, poisonous, corrosive, and irritant substances. The California regulations contained in Title 8 (California equivalent of 29 CFR) are generally more stringent than those contained in Title 29 of the Federal regulations. The administering agency for these requirements is the California Occupational Safety and Health Agency (Cal-OSHA).

California Health & Safety Code Sections 25500 - 25543.3; 19 CCR Section 2720 - 2734. These sections require the preparation of a HMBP by the facility operator. The HMBP identifies the hazards, storage locations and storage quantities for each hazardous chemical stored onsite. The HMBP is submitted to the CUPA for emergency planning purposes. A HMBP will be prepared by the VV2 Project to comply with these requirements. The administering agency is the CUPA, the City of Victorville Fire Department.

California Health & Safety Code Section 25531 et seq. The CalARP Program regulations were developed by the California Office of Emergency Services (CCR Title 19, Division 2, Chapter 4.5) to merge the Federal and State programs for the prevention of accidental release of regulated toxic and flammable substances. The preparation of a CalARP RMP is required when certain listed toxic or flammable substances are used in excess of the listed threshold quantity. The RMP addresses in detail the emergency planning and response actions in the event of a hazardous materials release at a facility. The RMP is based on studies identifying potential hazards associated with the handling of these listed materials proposed for use at the facility. The CalARP regulations define three program
levels for RMPs depending on the complexity, accident history and potential impact of a worst-case release of the regulated substance.

The following is a summary of the Federal and State regulated substances to be used at the VV2 Project:

- **Section 2770.5 - Tables 1 and 2 of CCR Section 2770.5** list Federal Regulated Substances and threshold quantities for accidental release prevention, including flammable substances. Hydrogen is on the Federal list; however, aqueous ammonia (less than 20 percent concentration) and sulfuric acid are not. The expected maximum quantity of hydrogen of 4,800 pounds (approximately 850 pounds in the generators plus 3,950 pounds in storage tanks) at the VV2 Project does not exceed the listed threshold quantity of 10,000 pounds. Therefore, hydrogen is not considered a Federal Regulated Substance.

- **Section 2770.5 - Table 3 of Section CCR 2770.5** lists State Regulated Substances and threshold quantities for accidental release prevention. Aqueous ammonia and sulfuric acid are listed. The maximum quantity of aqueous ammonia proposed for storage at the VV2 Project (30,000 gallons or approximately 45,000 pounds as ammonia) exceeds the threshold quantity of 500 pounds; therefore, aqueous ammonia is considered a State Regulated Substance for which a RMP is required. Sulfuric acid is a State Regulated Substance only if: 1) it is concentrated with greater than 100 pounds of sulfuric trioxide; 2) the acid meets the definition of oleum; or 3) the sulfuric acid is in a container with flammable hydrocarbons; none of these three sulfuric acid criteria apply to the VV2 Project.

According to the CalARP regulations, the owner or operator of a facility that handles more than the threshold quantity of regulated substance(s) shall submit an RMP that reflects all covered processes at the facility. As noted above, aqueous ammonia will be stored and used at the VV2 Project in excess of the 500-pound threshold for ammonia defined by the regulation, and thus a RMP will be prepared for the storage and use of aqueous ammonia. The administering agency is the CUPA, the City of Victorville Fire Department.

Water Quality Order 97-03-DWQ, General Permit CAS000001. The VV2 Project will also be subject to the statewide permit governing runoff from industrial facilities. The permit requires implementation of a Storm Water Pollution Prevention Plan (SWPPP) overseen by the State Water Resources Control Board through its Regional Boards. The SWPPP describes the management of a variety of hazardous materials and, therefore, will
have some bearing on hazardous materials management. The SWPPP is discussed in more detail in Section 6.17, Water Resources, of this AFC.

6.7.1.3 Local

The Victorville California Municipal Code, Section 8.05.020 adopts the Uniform Fire Code (UFC), year 2000 edition, in its entirety. The City of Victorville Fire Department is the administering agency. The UFC is discussed in more detail in Section 6.7.1.4 below.

As discussed above, local agencies (the City of Victorville Fire Department in this case) have responsibilities for administering and overseeing compliance with Federal and State hazardous materials requirements.

6.7.1.4 Industry Codes and Standards

American Society of Mechanical Engineers (ASME), American National Standards Institute (ANSI) and American Society of Testing Materials (ASTM) publish extensive codes and standards covering most aspects of power plant design and construction, ranging piping to storage tanks to combustion turbines. There is no administering agency specifically for ASME, ANSI or ASTM code enforcement.

Uniform Fire Code, Articles 79, 80, and others. Article 80 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 does, however, contain 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 identifies requirements for combustible and flammable liquids. The administering agency for these requirements is the City of Victorville Fire Department.

National Fire Protection Association (NFPA) publishes standards for fire prevention. Several NFPA standards potentially apply to the construction, operation and maintenance of the facility, including standards for hydrogen technologies, installation of sprinkler protection, fire extinguishers, explosion prevention, flammable and combustible liquids use, installation and operation of gas turbines, fire prevention during welding and cutting, handling compressed gases, fire alarms, cooling towers, and construction standards for buildings and electrical facilities.
6.7 Hazardous Material Handling

6.7.1.5 Permits Required and Permit Schedule

Environmental permits are not required for hazardous materials handling for the proposed VV2 Project. However, the project is required to file written plans related to hazardous material handling with the City of Victorville Fire Department, as discussed above. These are the HMBP which must be submitted 30 days prior to the start of VV2 Project operations, and the CalARP RMP, which must be submitted 90 days prior to the start of operations.

6.7.1.6 Involved Agencies and Agency Contacts

Agencies responsible for hazardous materials handling and agency contacts are provided in Table 6.7-2.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Contact</th>
<th>Issue</th>
</tr>
</thead>
</table>
| City of Victorville Fire Department| Greg Coon, Hazardous Material Specialist  
P.O. 5001  
Victorville, CA 92393  
(760) 955-5229 | HMBP, RMP, Uniform Fire Code, NFPA |
| U.S. EPA Region IX  
75 Hawthorne Street  
San Francisco, CA 94105 | (415) 947-8000 | RMP |
| OSHA Region IX  
71 Stevenson Street, Room 420  
San Francisco, CA 94105 | (415) 975-4310 | PSM, hazardous material storage, worker safety |
| Cal-OSHA (San Bernardino)  
464 W. 4th St., Ste. 332,  
San Bernardino, CA 92401 | (909) 383-4321, fax (909) 383-6789 | Hazardous material storage, worker safety |
| National Response Center | (800)-424-8802 | Hazardous Substance release notification |
| Office of Emergency Services  
3650 Schriever Ave.  
Mather, CA 95655 | Randy Schulley, Chief  
(916) 845-8510 (non-emergency)  
(800) 852-7550 (emergency) | Hazardous Substance release notification |

6.7.2 Affected Environment

The VV2 Project will be developed on a roughly 275-acre site that is largely undeveloped; there are a few 5-acre parcels that contain residential and related structures and/or abandoned vehicles, trailers, and debris. The immediately adjacent lands in all
four directions of the site are undeveloped. The VV2 Project site will be closed to public access during both construction and operation. A key consideration for a hazardous materials analysis is the proximity of sensitive receptors, which are defined as schools, hospitals, day-care centers, etc. As shown on Figure 6.11-2 in the AFC public Health section, the nearest educational or medical facilities are the Oro Grande Elementary School (approximately three miles from the VV2 site), the Harold George Magnet School and Harry Shepard Middle School (both in Victorville and both between three and four miles from the site), and the St. Mary Medical Center in Adelanto (approximately 4.2 miles from the Site). The nearest residence to the site is approximately one mile west of the site on Colusa Road.

The VV2 Project will also involve the construction of linear facilities, including a reclaimed water supply pipeline, sanitary wastewater pipeline, natural gas supply pipeline and electrical transmission lines. There are no known hazardous materials currently stored or used on the properties designated for these project components. While no storage of hazardous materials is associated with operating these linear facilities, it is possible that soil contaminated with hazardous substances may be encountered during their construction. Management of contaminated soils that might be encountered is addressed in Section 6.16, Waste Management.

6.7.3 **Significance Criteria**

The hazards and potential adverse impacts on the public health, worker safety, or the environment associated with hazardous material storage and use as a result of the proposed VV2 Project would be considered significant if any of the following conditions are met:

- Noncompliance with any applicable design code or regulation;
- Nonconformance to National Fire Protection Association (NFPA) standards;
- Nonconformance to regulations or generally accepted industry practices related to operating policies and procedures concerning the design, construction, security, leak detection, spill containment, or fire protection;
- Significant increase in risk of fatality or serious injury;
- Substantial human exposure to a hazardous material;
- Significant exceedance of the OSHA exposure limits onsite; or
- Significant exceedance of the CEC or EPA risk management exposure endpoints offsite.
The first three significance criteria listed above are related to design codes, fire codes, and generally accepted industry practices. As discussed in Section 2.0, Project Description, and Section 6.18, Worker Safety, the VV2 Project will be designed to meet all applicable standards to reduce the risk of an accidental release, operated in a manner that complies with safety standards and practices, and maintained so as to provide a safe workplace for plant personnel and to prevent significant adverse offsite impacts to the public at large. In addition, as presented in AFC Appendix D, Engineering Design Criteria, VV2 Project construction, and operation will incorporate up-to-date industrial technology and design standards; and also adhere to regulatory health and safety codes and guidelines; as well as established good industrial practices, and training, operating, inspection, and maintenance procedures that will minimize the risk and severity of potential upset conditions. Thus, since the Project will be constructed, operated, and maintained in accordance with applicable LORS, no further hazard analysis related to equipment design is required. The analysis of potential hazardous materials impacts presented in the following pages focuses on potential upset scenarios (e.g., accidental aqueous ammonia releases, chemical spills, or fire and explosion) that may result in risk of serious injury or substantial chemical exposure.

6.7.4 Environmental Impacts

The anticipated direct, indirect and cumulative impacts from construction, operation and maintenance of the proposed VV2 Project are addressed in the following subsections.

6.7.4.1 Construction

Hazardous materials that will be used during project construction include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paint. There are no feasible alternatives to these materials for operation of construction vehicles and equipment. No acutely hazardous substances will be used or stored onsite during construction.

Diesel fuel is the hazardous material with the greatest potential for environmental consequences during the construction phase due to the use of diesel fuel in construction equipment, and the frequent refueling that may be required. To minimize the potential for a release, diesel fuel will not be stored onsite, except in equipment/vehicle fuel tanks. When refueling is required, a mobile fuel truck will be brought onsite to fuel each device. The fueling will be supervised by both the fuel truck and equipment operators. Any fuel spilled will be promptly cleaned up, and any contaminated soil disposed of in accordance with the applicable State and Federal requirements.
Small volumes of hazardous materials will be temporarily stored onsite inside fuel and lubrication service trucks. Paints and solvents will be stored in flammable material storage cabinets. Maintenance and service personnel will be trained in handling these materials. The most likely incidents involving these hazardous materials would be associated with minor spills or drips. Impacts to the site workers, the public or the environment of a minor spill or leak will be mitigated through the emergency response training program and procedures that will be implemented by project construction contractors and employees, and by thoroughly cleaning up minor spills as soon as they occur. Soil contaminated by a spill or leak will be disposed in accordance with the applicable State and Federal requirements. There is minimal potential for environmental impacts from hazardous material incidents involving other hazardous materials during construction.

### 6.7.4.2 Operation and Maintenance

Hazardous materials will be used and stored onsite during operation and maintenance of the VV2 Project. The hazardous material inventory, the general operational safety practices employed during hazardous material storage and use, the material-specific handling practices, and the toxicity of each hazardous material are discussed below.

**Hazardous Material Inventory.** A list of the large-quantity hazardous materials stored and used at the site along with the toxicity and storage practices for each material is provided in Table 6.7-3.

**General Operating Practices.** Chemicals will be stored in vessels or tanks specifically designed for their individual characteristics. All hazardous materials storage vessels will be designed in conformance with the applicable ASME codes. Large quantity (bulk) chemicals will be stored outdoors in aboveground storage tanks manufactured of carbon steel or plastic. Spill containment curbs or dikes to contain the chemicals in the event of a leak or spill will be constructed around each of the major hazardous chemical storage areas. Bulk storage tanks containing ammonia, sulfuric acid, sodium hydroxide, sodium hypochlorite, and the various boiler treatment chemicals will each have secondary containment dikes capable of holding the tank volume plus an allowance for precipitation (25-year, 24-hour rain event). The containment areas will be coated with a chemical resistant coating (e.g., epoxy) to ensure long-term integrity of the containment structure.

Small quantity chemicals will be stored in their original delivery containers in order to minimize risk of upset. Personnel working with chemicals will be trained in proper handling technique and in emergency response procedures for chemical spills or accidental releases. Personal protection equipment (PPE) will be provided.
### Table 6.7-3
**Summary of Special Handling Precautions for Large Quantity Hazardous Materials**

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Relative Toxicity$^1$ and Hazard Class$^2$</th>
<th>Permissible Exposure Limit</th>
<th>Storage Description (Capacity)</th>
<th>Storage Practices and Special Handling Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas (methane)</td>
<td>Low toxicity; Flammable gas</td>
<td>None Established</td>
<td>Pressurized carbon steel pipeline</td>
<td>Pressure relief valves</td>
</tr>
<tr>
<td>Hydrogen Gas</td>
<td>Low toxicity; Flammable gas</td>
<td>None Established</td>
<td>In generator cooling loop 320 lb, with maintenance inventory of 320 lb in a “tube trailer”</td>
<td>Pressure safety tank, crash posts, pressure relief valves</td>
</tr>
<tr>
<td>Aqueous Ammonia (ammonium hydroxide), &gt;20% solution</td>
<td>High toxicity; Corrosive, Irritant</td>
<td>25 ppm (NIOSH)</td>
<td>Carbon steel tank (30,000 gal)</td>
<td>Spill containment, ammonia detectors and alarms and RMP</td>
</tr>
<tr>
<td>Sodium Hydroxide, 50% solution</td>
<td>High toxicity; Corrosive</td>
<td>2 mg/m$^3$ OSHA</td>
<td>Carbon steel tank (7,500 gal)</td>
<td>Isolated from incompatible chemicals and secondary containment area</td>
</tr>
<tr>
<td>Sodium Hypochlorite, 12.5% solution</td>
<td>High toxicity; Poison-B, Corrosive</td>
<td>0.5 ppm (TWA), 1 ppm (STEL) as Chlorine</td>
<td>Plastic tank (2,500 gallons)</td>
<td>Secondary containment</td>
</tr>
<tr>
<td>Sulfuric Acid, 93% solution</td>
<td>High toxicity; Corrosive, water reactive</td>
<td>1 mg/m$^3$ OSHA</td>
<td>Lined, carbon steel tank (10,000 gal)</td>
<td>Isolated from incompatible chemicals, lined tank, and secondary containment</td>
</tr>
<tr>
<td>Boiler Water Treatment Chemicals (e.g., organic phosphate inhibitors, disodium and trisodium phosphate)</td>
<td>Low to moderate toxicity; Hazard class varies by ingredient</td>
<td>Varies by ingredient</td>
<td>Plastic tank, maximum 4,000 gal, or inventory in plastic totes 330 gal, or 55-gal drums</td>
<td>Secondary containment</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>Low toxicity; Non flammable gas</td>
<td>5,000 ppm TWA (9,000 mg/m$^3$)</td>
<td>Carbon steel cylinders, 24 tons maximum onsite, 6 tons in the largest container</td>
<td>Carbon steel tank with crash posts</td>
</tr>
</tbody>
</table>
### Table 6.7-3
**Summary of Special Handling Precautions for Large Quantity Hazardous Materials**

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Relative Toxicity¹ and Hazard Class²</th>
<th>Permissible Exposure Limit</th>
<th>Storage Description (Capacity)</th>
<th>Storage Practices and Special Handling Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Oxide (Lime)</td>
<td>Low toxicity; ORM-B</td>
<td>2 mg/m³, 8-hour TWA</td>
<td>4,000 pounds maximum, 50-pound bags on pallets, mixed with water as needed in 2,000-gallon fiberglass tank</td>
<td>Secondary containment for tank; dry, indoor storage for dry material</td>
</tr>
<tr>
<td>Ferric Sulfate, 35% solution</td>
<td>Moderate toxicity; ORM-E</td>
<td>1 mg/m³</td>
<td>Carbon steel or fiberglass tank, 8,000 gal</td>
<td>Secondary containment</td>
</tr>
<tr>
<td>Magnesium Chloride, 31% solution</td>
<td>Low toxicity; Highly toxic</td>
<td>Not established</td>
<td>Carbon steel or fiberglass tank, 10,000 gal</td>
<td>Secondary containment</td>
</tr>
<tr>
<td>Sulfur hexafluoride gas</td>
<td>Low toxicity; Non flammable gas</td>
<td>Not established</td>
<td>Used in switchgear</td>
<td>None</td>
</tr>
<tr>
<td>Lube Oil</td>
<td>Low toxicity Hazard class – NA</td>
<td>Not established</td>
<td>Carbon steel tanks, largest container 1,200 gal, 4,000 gal total in tank storage, maintenance inventory in 55-gallon steel drums</td>
<td>Secondary containment area for each tank and for maintenance inventory</td>
</tr>
<tr>
<td>Insulating Oil</td>
<td>Low toxicity Hazard class – NA</td>
<td>Not established</td>
<td>Carbon steel transformers, largest vessel 16,000 gal, total inventory 65,000 gal, no maintenance inventory onsite</td>
<td>Used only in transformers, secondary containment for each transformer</td>
</tr>
<tr>
<td>Diesel Fuel</td>
<td>Low toxicity; Combustible liquid</td>
<td>PEL not established, TLV 100 mg/m³ (ACGIH)</td>
<td>Carbon steel tank (1,200 gallons [generator]), Carbon steel tank (300 gallons [fire-water pump engine])</td>
<td>Stored only in fuel tanks of emergency engines, secondary containment.</td>
</tr>
<tr>
<td>Therminol VP-1</td>
<td>Moderate toxicity, Irritant; Combustible Liquid (Class III-B)</td>
<td>Biphenyl: 0.2 ml/m³; Diphenyl ether: 1 ml/m³, OSHA</td>
<td>260,000 gallons in system, no additional storage</td>
<td>Continuous monitoring of fluid levels in system; prompt clean up and repair.</td>
</tr>
</tbody>
</table>
### Table 6.7-3
Summary of Special Handling Precautions for Large Quantity Hazardous Materials

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Relative Toxicity(^1) and Hazard Class(^2)</th>
<th>Permissible Exposure Limit</th>
<th>Storage Description (Capacity)</th>
<th>Storage Practices and Special Handling Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detergent (ZOK or equivalent)</td>
<td>Low toxicity</td>
<td>None</td>
<td>55-gallon plastic drums or 330-gallon plastic totes</td>
<td>Brought onsite only when required for maintenance cleaning of the turbines.</td>
</tr>
</tbody>
</table>

1. Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used to describe materials with an NFPA rating of 2 or 3. High toxicity is used to describe materials with an NFPA rating of 4.
2. NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.
Appropriate safety programs will be developed addressing hazardous materials storage and use, emergency response procedures, employee training requirements, hazard recognition, fire safety, first-aid/emergency medical procedures, hazardous materials release containment/control procedures, hazard communications training, PPE training and release reporting requirements. These programs include a RMP for aqueous ammonia storage and use in accordance with the CalARP regulations, Injury and Illness Prevention Program (also see Section 6.18, Worker Safety), fire response program, power plant safety program and facility standard operating procedures. As required under Federal and California regulations, a HMBP will be prepared and submitted to the City of Victorville Fire Department.

The facility will be subject to the Storm Water Pollution Prevention Plan (SWPPP) requirements administered by the State Water Resources Control Board under the Storm Water General Permit. The SWPPP will describe the management practices in place at the facility (e.g., regular inspections and maintenance of drainage facilities, employee training in proper hazardous material storage and handling procedures) to prevent the release or discharge of hazardous materials to the waters of the State (see discussion in Section 6.17, Water Resources).

Chemical-Specific Operating Practices and Chemical Toxicity. The following paragraphs address substance-specific operating practices and toxicity issues.

Fuel Gas Delivery. An existing natural gas pipeline beneath Helendale Road adjacent to the Project site will supply natural gas to the facility. A short pipeline spur will be installed connecting the onsite facilities to the existing offsite pipeline adjacent to the site’s southwestern boundary; there will be no onsite storage of natural gas. Natural gas consists mainly of methane (approximately 95 percent). Methane is a flammable gas with low toxicity.

Compressed Gas Storage. Hydrogen will be used as a generator coolant for the VV2 Project. A maximum of 4,800 pounds of hydrogen (approximately 850 pounds in the generators plus 3,950 pounds in storage tanks in a portable rack known as a “tube trailer”) may be present onsite at any one time. The hydrogen tanks on the tube trailers are DOT-specification tanks, capable of withstanding the normal abuse of highway travel and all but the very worst vehicular collisions without release. In addition, the tube trailers will be located outside, remote from the combustion turbine generators, away from electrical lines and other potential ignition sources as required by applicable building and fire codes. The hydrogen tanks also will be protected from vehicular impact by installation of crash posts or other protective measures. While parked at the facility,
the tanks have a very low risk of failure. Hydrogen is a flammable gas with a NFPA hazard rating of 4 (NFPA 1994), and low toxicity.

Other compressed gases stored and used at the facility may include gases typically used for maintenance activities, such as shop welding and calibration gases for the emissions monitoring equipment. These gases include acetylene, argon, carbon monoxide, nitric oxide, nitrogen and oxygen. In addition, carbon dioxide is used as a fire suppression agent in the turbine enclosures.

Acetylene is a flammable gas and narcotic, it is highly reactive and has low toxicity. Oxygen is a powerful oxidizer with low toxicity. Nitrogen, carbon dioxide and argon have low toxicity but may cause asphyxiation if released in a confined area. Carbon monoxide is a flammable gas with moderate toxicity. Nitric oxide is a Poison-A. The potential impacts presented by the use of these gases at the VV2 Project are less than significant based on the following site-specific conditions:

- Compressed gases will be stored in small containers at the facility (typically 200 cubic feet per gas cylinder), and the total quantity will be kept to the minimum required for operation and maintenance.
- The compressed gases will be delivered and stored in DOT-approved safety cylinders, and secured by chains to prevent tipping and physical damage.
- The compressed gases will be stored in an isolated storage area surrounded by crash posts to minimize potential for accidents or upset.
- Incompatible gases (e.g., flammable gases and oxidizers) will be stored in separate, isolated areas.
- Operators trained in the proper use of equipment and materials.

Storage of compressed gases in standard portable cylinders rather than a single larger cylinder will limit the maximum quantity released from an individual cylinder to less than 200 cubic feet in the unlikely event of a cylinder failure, and this small amount would not have offsite consequences.

**Aqueous Ammonia** - Aqueous ammonia (less than 20 percent concentration by weight of ammonia) will be the only chemical stored in sufficient quantities at the VV2 Project to be classified as a regulated substance subject to the requirements of the CalARP RMP program.

SCR systems with aqueous ammonia injection will be used to control NO\textsubscript{x} emissions in the stack exhaust. NO\textsubscript{x} emissions control can be accomplished using either anhydrous
ammonia (an undiluted almost pure form of ammonia) or aqueous ammonia (a water solution of lower concentration). The selection of the less hazardous form of ammonia (aqueous rather than anhydrous) is one major means for mitigating potential hazards of an accidental spill. Since it is of much lower concentration, a potential aqueous spill would have a much lower impact than an equivalent size anhydrous spill. Because the ammonia is diluted with water, the ammonia vapor pressure will be lower than anhydrous ammonia, resulting in a lower evaporation rate, which also reduces the potential offsite impact. In order to have the same amount of ammonia available for use in NOx control, aqueous ammonia requires more tanker truck shipments than anhydrous ammonia because of its lower concentration. Aqueous ammonia was selected over anhydrous ammonia for the proposed project in order to reduce the severity of any potential ammonia accident.

Aqueous ammonia will be stored onsite in a 30,000-gallon pressure vessel (tank). Pressurized metallic storage tanks have a mean time to catastrophic failure of 0.0109 per million hours of service, or on average, one failure every 10,500 years (Center for Chemical Process Safety, 1989). Thus, failure of a pressurized aqueous ammonia storage tank during the lifetime of the facility is unlikely. The CEC has noted this in prior AFCs and regards catastrophic rupture of an ammonia tank as not a credible spill scenario. The ammonia storage tank will be surrounded by spill containment walls to hold the entire capacity of the tank plus an additional volume to contain a 25-year, 24-hour storm event. For this analysis, 10 percent excess capacity is used to approximate a 25-year, 24-hour storm event in the project area.

The containment vessel drains to an underground sump that can hold the entire contents of the containment structure (110 percent of the ammonia tank’s capacity). The inlet to the sump has an opening 2 feet by 2 feet in size. Any ammonia spilled from the storage tank will immediately drain into the sump with only a limited surface (4 square feet) exposed to the atmosphere.

The aqueous ammonia storage and handling facilities will be equipped with continuous tank level monitors, temperature and pressure monitors and alarms, excess flow and emergency island valves, and a steel-reinforced concrete containment structure surrounding the tank and piping. An ammonia vapor detection system will be installed to allow rapid detection and quick response to any accidental spill of ammonia. Only trained technicians will conduct system maintenance and repairs.

Aqueous ammonia typically will be delivered to the facility in 8,000-gallon tank trucks. Tank trucks will be unloaded in a tank truck unloading area immediately east of the
ammonia tank. The unloading area is paved with concrete and surrounded by a curb. The unloading area drains west into the ammonia tank containment structure, and then into the underground sump. Consequently, any ammonia spilled during the tank loading process will immediately drain into the underground sump with only a limited surface (4 ft square) exposed to the atmosphere. The edge of the ammonia unloading area is approximately 300 ft from the facility fence line.

During unloading operations, the driver performing the unloading operation will wear protective equipment including respiratory protections, and will have a cut-off switch to stop the chemical transfer in case of an emergency. There will be a second operator in the area but away from the immediate operations able to provide backup support if there is a leak, hose break, or other accident during unloading.

With respect to the transport of ammonia to the Project site, U.S. Department of Transportation (DOT) regulations require all truck tank trailers to meet strict requirements for collision and accident protection. The tank trucks are designed to withstand violent accidents without breach of containment. The frequency for serious hazardous material incidents involving large trucks is approximately 0.0022 per million vehicle miles (U.S. Department of Transportation, 2004). Assuming a one-way trip distance to the VV2 Project of 90 miles from Orange County to deliver ammonia, a truck capacity of 8,000 gallons, and an estimated 168 trucks deliveries per year of aqueous ammonia, an accident would be expected to occur approximately once every 30,000 years. Thus, a release of aqueous ammonia from the delivery truck during the lifetime of the facility is unlikely.

As noted previously, a CalARP RMP will be prepared for the VV2 Project for the storage and use of aqueous ammonia. The RMP will be based on studies identifying potential hazards associated with the handling of aqueous ammonia at the facility, including a hazards analysis, a seismic assessment, an offsite consequence analysis, and recommendations for ammonia system improvements that result from the studies. The RMP will address in detail the emergency planning and response actions in the event of an ammonia release from the facility, including emergency response plans and training procedures. The RMP will be submitted to the local CUPA for review (the City of Victorville Fire Department) and submitted to EPA.

The probability of a catastrophic release of aqueous ammonia during VV2 Project operations is very small. The low release probability is a result of a number of factors, including the stringent design standards for pressurized storage vessels, the mitigation measures that will be built into the ammonia system at the VV2 Project, and the chemical accident prevention program elements that the project will establish to comply with the
requirements of the CalARP and RMP accident prevention programs. In addition, as discussed in Section 6.7.4.3, the worst-case release scenarios evaluated showed no offsite impacts.

**Other Large-Quantity Hazardous Materials** - Storage of large quantities of sulfuric acid (10,000 gallons), sodium hydroxide (7,500 gallons), and sodium hypochlorite (8,000 gallons) will require special precautions, due to their corrosive natures. Each of the chemicals will be stored in a lined, carbon steel tank to minimize the potential for catastrophic failure of the tank. A spill containment structure surrounding each storage tank will also be provided in order to contain spills and leaks. The spill containment area will be coated with a corrosive-resistant material such as epoxy. Sulfuric acid is corrosive and water reactive. Although sulfuric acid is highly toxic, due to the low vapor pressure, it is typically hazardous only by direct physical contact. Sodium hydroxide is corrosive. Although sodium hydroxide is highly toxic, due to the low vapor pressure, it is typically hazardous only by direct physical contact. Sodium hypochlorite is highly toxic, corrosive and a Poison-B.

Boiler water treatment chemicals include the following four types of chemicals: organic phosphate inhibitor (1,200 gallons); disodium and trisodium phosphate (1,200 gallons); neutralizing amine (250 gallons); and oxygen scavenger (250 gallons). These chemicals will be stored in plastic tanks or totes, which will provided with secondary containment sufficient to hold the full stored contents. The toxicity of each mixture is low, however, the toxicity of any individual specific ingredient of the mixture may be higher.

Detergent is used periodically to clean the combustion turbines. The detergent is purchased in 55-gallon plastic drums or 330-gallon plastic totes, and may be diluted with water prior to use. The detergent is brought onsite only when required for maintenance. The detergent has low toxicity and does not meet the criteria for any hazard class defined by the UFC.

Therminol VP-1™ is the heat transfer fluid that will be used in the solar component of the VV2 Project. Approximately 260,000 gallons of Therminol are present in the solar system, but because of its relatively high freezing point (54°F), Therminol will not be stored onsite outside of quantities contained within the solar system itself. The heat transfer system is a closed loop and fluid levels are monitored continuously and automatically. A fluid leak in the system would be detected immediately and prompt maintenance repair of any leak will minimize the volume of the leak. Therminol is a synthetic oil consisting of diphenyl ether and biphenyl. Biphenyl has a CERCLA Reportable Quantity of 100 pounds; approximately 377 pounds (42 gallons) of Therminol
contains the Reportable Quantity of biphenyl. Therminol is moderately toxic, a skin irritant, and a Class III-B combustible liquid. The MSDS for Therminol is provided in Appendix E of the AFC.

Lube oil is stored in 1,200-gallon carbon steel tanks associated with each turbine. The turbine enclosures provide secondary containment sufficient to hold the full contents of the tanks. The tanks are inspected daily to ensure that they are not leaking. Lube oil has low toxicity and does not meet the criteria for any hazard class defined by the UFC.

Diesel fuel will be used to fuel the emergency fire water pump and emergency diesel generator engines. The fire water pump engine has a 300-gallon fuel supply, and the emergency generator has a 1,200-gallon fuel supply in carbon steel tanks. The equipment skid provides secondary containment that can hold the full amount of the fuel. Diesel is a combustible liquid with low toxicity.

Insulating oil is used in each of the 13 electrical transformers at the facility. The oil capacity ranges from 275 gallons for the smallest transformer to 16,000 gallons for the largest transformer, with a total quantity of insulating oil present of 60,000 gallons. Each transformer is installed in a secondary containment structure that will contain 100 percent of the transformer capacity plus an allowance for precipitation.

Due to the storage of oil in quantities exceeding 1,320 gallons in above ground storage in the transformers, lube oil sumps, and fuel tanks, the VV2 Project will prepare a SPCC plan. The Plan will describe the storage of oil, the spill prevention measures employed by the facility, the potential consequences of a spill, and spill response measures developed by the facility to respond to an oil spill. The Plan will also describe the inspection and monitoring performed by the facility associated with oil storage. SPCC requirements are discussed in more detail in Section 6.17, Water Resources.

**Small-Quantity Hazardous Materials** - In addition to the chemicals listed in Table 6.7-3, small quantities (less than five gallons) of paints, oils, grease, solvents, pesticides, detergents, and janitorial supplies typical of those purchased at a retail hardware store may also be stored and used at the facility. These materials will be stored in the Maintenance Shop. Flammable materials (e.g., paints, solvents) will be stored in flammable material storage cabinet(s) with built-in containment sumps. The remainder of the materials will be stored on shelves, as appropriate. Due to the small quantities involved, the controlled environment, and the concrete floor of the shop, a spill can cleaned up without significant environmental consequences.
6.7.4.3 Offsite Consequence Analysis

Aqueous ammonia is a regulated substance that has the potential for offsite risk if accidentally released. Risk has two components - frequency and severity. The more often a particular mishap is likely to occur and the more hazardous the material involved in the mishap, the higher the risk. Risk can be reduced by reducing either the frequency of occurrence, the severity of the release, or both in combination. As discussed, the applicant has elected to operate the facility using aqueous ammonia for NOx emissions control, rather than the more hazardous anhydrous ammonia. This choice leads to more frequent ammonia deliveries, increasing the probability of a release, but significantly reducing the severity of a potential release.

**Methodology.** The methodology and assumptions used for the offsite consequence analysis are summarized in the following paragraphs.

The CEC has defined four benchmark exposure levels for ammonia. These benchmark exposure levels are: 1) lethal, 2) immediately dangerous to life and health, 3) the RMP endpoint required by EPA and the State of California, and 4) a level considered to be without serious adverse effects on the public. The ammonia levels corresponding to the four CEC benchmark criteria are 2,000 ppm, 500 ppm, 200 ppm, and 75 ppm, respectively. A significant impact is defined as an offsite ammonia concentration exceeding 75 ppm. The EPA guidance document “Risk Management Program Guidance for Offsite Consequence Analysis” (EPA, 1999) provides a methodology for estimating ammonia flux from a liquid pool that was used to estimate the ammonia flux for both the worst-case and the alternative release scenarios. The guidance was used to estimate the ammonia dispersion for each release scenario, and the look-up tables in that guidance were used to determine the distance from a release that the ammonia concentration equals these endpoint concentrations identified above. The two potential release scenarios that were evaluated are:

- Worst-case Release - Catastrophic Failure of the Ammonia Storage Tank
- Alternative-case Release - Truck Unloading Accident, Loss of Less than Truckload

**Worst-case Release** - EPA has defined worst-case and alternative release scenarios for use in offsite consequence analyses under the RMP program (EPA, 1999). Identical assumptions are required under the CalARP RMP program. For aqueous ammonia, EPA defines the worst-case release as the instantaneous release of the entire contents of the storage vessel and the evaporation of ammonia from the surface of the resulting pool of ammonia. Passive mitigation such as a containment structure may be taken into account in the analysis. The meteorological conditions that apply for the worst-case release are very
stable atmospheric dispersion conditions, “F” stability, typical of nighttime conditions, and a wind speed of 1.5 meters per second. The temperature of the liquid is assumed to be the highest maximum temperature in the past three years. The ambient temperature is used to estimate the vapor pressure of ammonia, a critical parameter for estimating ammonia evaporation rate from the pool.

The CEC staff has previously determined that the catastrophic breach of an ammonia tank is not a credible accident. However, the worst-case scenario is based on a pool surface equal to the dimensions of the containment structure. A release of less than the full ammonia tank into containment would also be likely to produce a liquid pool covering the entire floor of the containment structure, thus resulting in a similar initial ammonia evaporation rate. Therefore, it is appropriate to assume that the exposed surface area of the containment sump of 4 square feet is covered with aqueous ammonia. The worst-case scenario is assumed to occur at night. For this analysis, the maximum temperature recorded of 107ºF (41.7ºC) in a recent five year period (2000 – 2004) at the MDAQMD’s Victorville air quality monitoring station was assumed, resulting in a very conservative estimate of the emission rate and dispersion characteristics. This is because the very stable atmospheric stability class assumed (F stability) is not physically possible at a time when the ambient temperature is over 40ºC, and the facility will normally receive ammonia deliveries during daylight hours.

Alternative-case Release - For the alternative-case release, EPA allows use of more typical meteorological conditions: neutral atmospheric dispersion conditions (“D” stability) and a wind speed of 3.0 meters per second, or other representative meteorological conditions for the geographic area where the release is posited. For the alternative release, the ambient temperature at the time of the spill was assumed to be the five-year maximum temperature of 107 ºF.

The alternative release scenario assumes a contained 10-minute release from a loading hose separation during an ammonia delivery. Hose separation could be caused by either a hose rupture or a disconnection of the hose at a coupling point. The truck unloading area will have a berm and sloped drainage to capture and route all ammonia spilled in the truck unloading area into a collection trench that directs the ammonia to an underground sump capable of holding the entire truck contents of 8,000 gallons. The opening of the sump is approximately a four foot square. Because the spill is assumed to be contained, and the ammonia flux is determined by the exposed surface area, ammonia concentration, and temperature, the release rate from the hose does not factor into the dispersion estimate.

Offsite Consequence Analysis Results. Table 6.7-4 presents the modeling results for the two ammonia release scenarios described. Neither of the two postulated releases produce an exceedance of the 75 ppm significance threshold that extends offsite. Thus, no schools,
hospitals, other sensitive receptors, or residences are within the impact zone of either postulated release.

### Table 6.7-4
**Ammonia Release Scenario Results**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Significance Level (ppm)</th>
<th>Distance to Threshold(^1) (m)</th>
<th>Distance to Threshold(^1) (miles)</th>
<th>Population Exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worst-Case Release</td>
<td>75</td>
<td>85</td>
<td>0.05</td>
<td>0</td>
</tr>
<tr>
<td>Catastrophic Failure of Storage Tank</td>
<td>150</td>
<td>60</td>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>Nighttime release with F-stability, 1.5 m/s wind speed, 41.7º C</td>
<td>300</td>
<td>38</td>
<td>0.02</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>14</td>
<td>0.01</td>
<td>0</td>
</tr>
<tr>
<td>Alternative Case</td>
<td>75</td>
<td>36</td>
<td>0.02</td>
<td>0</td>
</tr>
<tr>
<td>Truck Unloading Accident</td>
<td>150</td>
<td>24</td>
<td>0.01</td>
<td>0</td>
</tr>
<tr>
<td>Daytime release with D-stability, 3.0 m/s wind speed, 41.7º C</td>
<td>300</td>
<td>18</td>
<td>0.01</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>6</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^1\) All distances are within the site boundaries

Given the highly conservative assumptions inherent in the RMP emission estimation scenarios, including the inherent assumption of the highest 5-year temperature occurring at night, it is unlikely that a real world accident would produce an actual impact distance that would approach the modeled worst-case distance.

**6.7.4.4 Fire and Explosion Risks**

The proposed VV2 Project will utilize two materials that pose potential risks of fire and explosion because of their flammability. These are natural gas and hydrogen, each of which is discussed below.

**Natural Gas.** Natural gas, which will be used as a fuel for the VV2 facility, poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in substantial quantities, it will not be stored onsite. The potential risk of a natural gas pipeline rupture will be reduced to insignificant levels through adherence to applicable codes and the development and implementation of appropriate operational procedures that are standard in the industry. The risk of a fire and/or explosion is not considered to be a significant risk by the CEC staff. (CEC, 1999).
Hydrogen. Hydrogen will be used as a generator coolant for the VV2 Project. Hydrogen is a flammable gas with a NFPA hazard rating of 4 (NFPA, 1991). A maximum of 850 pounds of compressed hydrogen in the generator cooling loop, plus 3,950 pounds in a tube trailer, may be present onsite at any one time. The hydrogen tanks on the tube trailer are DOT-specification tanks, capable of withstanding the normal abuse of highway travel, and all but the very worst vehicular collisions. In addition, the tube trailer will be located outside, remote from the combustion turbine generators, and away from electrical lines and other potential ignition sources, as required by applicable building and fire codes. The hydrogen tanks also will be protected from vehicular impact by installation of crash posts or other protective measures. Location of the hydrogen tube trailers as described above, coupled with operations consistent with electric power industry design and safety standards, present a negligible risk of explosion or fire.

6.7.4.5 Cumulative Impacts

Facility design and hazardous materials handling programs developed and implemented for the VV2 Project will reduce the project’s potential impacts to below significance levels. Other cumulative projects would be required to comply independently with hazardous materials regulations depending on their specific circumstances (e.g., nature and quantities of hazardous materials stored and used). Thus VV2 Project construction and operation activities will not cause or contribute substantially to significant cumulative impacts with respect to hazardous materials handling.

6.7.5 Mitigation Measures

This section describes the mitigation measures that are proposed in order to ensure that VV2 Project impacts resulting from hazardous materials handling are less than significant.

6.7.5.1 Construction Phase

HM-1. During construction, hazardous materials stored onsite will be limited to small quantities of paint, coatings and adhesive materials, and emergency refueling containers. These materials will be stored in their original containers inside a flammable materials cabinet. Fuels, lubricants, and various other liquids needed for operation of construction equipment will be transported to the construction site on an as-needed basis by equipment service trucks.

HM-2. An onsite safety officer will be designated to implement health and safety guidelines and, if necessary, contact emergency response personnel and local hospitals. Material Safety Data Sheets (MSDS) for each onsite chemical will
be maintained. Employees will be made aware of the chemicals and the location of MSDS sheets.

**HM-3.** Project construction contractors will be required to develop standard operating procedures for servicing and fueling construction equipment. These procedures will, at a minimum, include the following:

- No smoking, open flames or welding will be allowed in fueling/service areas.
- Servicing and fueling of vehicles and equipment will occur only in designated areas. These areas will be bermed, covered with concrete, or fashioned in some other manner to control potential spills.
- Fueling, service and maintenance will be conducted only by authorized, trained personnel.
- Refueling will be conducted only with approved pumps, hoses, and nozzles.
- All disconnected hoses will be handled in a manner to prevent residual fuel and liquids from being released into the environment.
- Drip pans will be placed under equipment to collect small drips and minimize potential spills during servicing.
- Service trucks will be equipped with fire extinguishers, personal protective equipment, and spill containment equipment, such as absorbents.
- Service trucks will not remain on the job site after fueling and service are complete.
- Spills that occur during vehicle maintenance will be cleaned up immediately and contaminated soil will be containerized and managed as a hazardous waste, if appropriate. A log of spills and clean-up actions will be maintained.
- Emergency phone numbers will be available onsite.
- All containers used to store hazardous materials will be properly labeled and kept in good condition.

**6.7.5.2 Operations Phase**

**HM-4.** Concrete spill containment berms or dikes will be constructed surrounding each of the bulk chemical storage tanks, including aqueous ammonia, sulfuric acid, sodium hydroxide, sodium hypochlorite, and scale inhibitors. The secondary containment dikes surrounding each tank will be designed to contain the tank volume plus additional volume to contain a 25-year, 24-hour rainfall event to account for precipitation. Sumps will be provided within the
diked area in order to facilitate removal of collected rainwater and spilled chemicals.

HM-5. Ammonia tank trucks will be unloaded in a tank truck unloading area paved with concrete and with sump capacity to provide secondary containment for the entire contents of the tank truck plus additional volume to account for precipitation.

HM-6. A fire protection system will be provided to detect, alarm, and suppress a fire, in accordance with the applicable LORS.

HM-7. Construction of the aqueous ammonia storage system will be in accordance with applicable LORS. The aqueous ammonia storage and handling facility will be equipped with the following safety features:

- Carbon steel tank equipped with continuous tank level monitors, temperature gage, and pressure monitor. Safety alarms will also be provided on each monitoring system.
- Pressure relief valves and excess flow control valves on tank and fill connections.

HM-8. A RMP for aqueous ammonia storage and use at the facility will be prepared before the initial filling of the ammonia tank. The RMP will include a hazard analysis, offsite consequence analysis, seismic assessment, emergency response plan, and training procedures. The RMP process will identify and propose adequate mitigation measures to reduce the risk to the lowest possible level.

HM-9. Hazardous materials will be stored and handled in accordance with all local, State and Federal regulations and codes. A safety program will be implemented including safety training programs for contractors and operations personnel. A HMBP will be prepared for submittal to the City of Victorville Fire Department.

HM-10. All areas subject to potential leaks of hazardous materials will be paved and bermed. Incompatible materials will be stored in separate containment areas.

6.7.5.3 Monitoring

Because environmental impacts caused by hazardous materials usage during construction and operation of the facility are expected to be minimal, an extensive monitoring program is not needed.
6.7.6 References


