

## **4.6 HAZARDS & HAZARDOUS MATERIALS**

This section addresses potential impacts associated with the physical effects of the site due to the historic storage of fuel oil within the boundaries of the subject site. Any potential site contamination, including soil and groundwater, is discussed within this section. Additionally, this section addresses potential hazards related to the use and transport of chemicals for the operation of the proposed desalination plant. Information contained in this section is based on the following documents: an Environmental Database Search investigation prepared by Dudek & Associates, Inc. for the offsite areas, and the Carlsbad Oaks North Specific Plan Draft Environmental Impact Report.

### **4.6.1 Existing Conditions**

#### **Hazardous Materials and Hazardous Material Sites**

##### **On-Site**

The plant site is owned by Cabrillo Power I LLC and is located within the Encina Power Station (EPS) site. The basic operational and functional characteristics of the power station have remained relatively constant since it began producing power in 1954. However, ownership of the power station changed hands in May 1999. Cabrillo holdings encompass approximately 386 acres and are generally bounded by SDG&E property on the south, Carlsbad Boulevard then the Pacific Ocean to the west, Interstate 5 to the east, and Agua Hedionda Lagoon to the north. Additional land uses onsite include the North County Transit District rail line traversing north-south through the power station site.

The EPS currently has a Spill Prevention Control and Countermeasure Plan (SPCC) for existing operation and maintenance activities that include:

- Chemical and chemical waste storage tanks
- Water tank storage facilities
- Construction materials storage
- Fabrication/machine shops
- Vehicle storage areas
- Fire brigade facilities
- Trash recycling facilities
- Processing, use and storage of natural gas, liquid natural gas, water supplies
- Fuel oil pipelines and booster stations
- Maintenance, storage and operating facilities

In addition, the EPS currently has a Risk Management Plan for Aqueous Ammonia during unloading, storage and handling operations.

### **Off-Site**

#### ***Hazardous Materials***

The proposed Carlsbad Seawater Desalination Plant would also include pipelines and appurtenant facilities off-site of the Encina Generating Station. The different pipeline alignments under study transverse approximately 32 miles of roadways, road easements, agricultural, and undeveloped land in the cities of Carlsbad, Vista, and Oceanside. While pipeline alignments have been established, specific construction details affecting their precise locations, including the depth of excavation and necessary areas of dewatering, have not been determined.

The Environmental Database Search investigation prepared by Dudek & Associates, Inc. (provided in *Appendix H*) consisted of a regulatory search of American Society for Testing and Materials (ASTM)- standard Local, County, State, and Federal databases, a review of regulatory databases available on the internet, a review of recent aerial photographs, and a limited “drive-by” site reconnaissance. While no sites were located within 0.25 miles of the desalination plant site, this report showed several sites located within 0.25 mile of various pipeline alignments that may contain hazardous materials that could be released into the environment as a result of construction activities.

These surrounding properties include: former State Cortese sites (State index of properties with hazardous waste per Government Code Section 65962.5), solid waste landfills (SWL), and leaking underground storage tank (UST) sites. Seventeen of these identified sites were located along the Faraday, or blue alignment option, and six sites were listed along the Palomar Airport (green) and Encina (yellow) alignment options. Additional Permitted sites that could affect environmental conditions have also been identified. Within the vicinity of the proposed pipelines, forty sites have been identified that may contain hazardous materials that could be released into the environment as a result of construction activities. These sites are described in *Table 4.6-1, Potentially Hazardous Sites*.

#### ***Airport Safety Hazard***

McClellan-Palomar Airport, located approximately three miles east of the plant site, adjacent to some of the offsite pipeline areas, is a general aviation, publicly owned airport facility. The Comprehensive Land Use Plan McClellan-Palomar Airport (SANDAG, 1994) identifies areas likely to be impacted by noise and flight activity created by aircraft operations at the airport. A draft update for the plan (March 2005) has been released for public review. The three areas of significant risk identified in the Land Use Plan include: the Airport Influence Area; the Runway Protection Zone;

## 4.6

## Hazards & Hazardous Materials

and the Flight Activity Zone. Portions of the offsite pipeline areas are located within the McClellan-Palomar Airport's Airport Influence Area, Flight Activity Zone ~~as~~ and Runway Protection Zone as delineated by the Land Use Plan. None of the desalination plant site facilities are within any of these zones.

**TABLE 4.6-1  
POTENTIALLY HAZARDOUS SITES**

Site No.	Site Name	Address	Distance From Project	Description	Hazard Potential
<b>State Cortese Sites, Government Code 65962.5*</b>					
1	Burroughs Corp	5600 Avenida Encinas, Carlsbad CA 92008	0.01 mile from the yellow alternative	Burroughs Corp was a manufacturer of electronic parts. The Department of Toxic Substances Control (DTSC) claims that Burroughs Corp used hazardous compounds, and contaminated soil existed at the site. Burroughs Corp has also been identified by the SWL database as having one waste management unit with a primary waste of hazardous process waste. Four concrete, single-wall USTs that were operating at the site have been removed. Burroughs Corp was placed on the NPL in 1981. This site was removed from the Cortese list two years after it was added in 1989.	No groundwater monitoring or soil data was reviewed, and the locations of the ponds and chemical storage tanks are not known. It is unknown if soil and groundwater were contaminated, and the location of potential contamination is unknown.
2	Beckman Instruments	2470 Faraday Avenue, Carlsbad CA 92008	0.02 mile from the blue alternative and less than 0.12 mile from the green alternative	Operation of Beckman Instruments included generation and off-site disposal of waste. Preliminary assessment of the site was completed in 1989 and the EPA has taken no further action. The Resource Conservation and Recovery Act (RCRA) considers the Beckman Instrument site a large quantity generator of waste. Aboveground storage tanks as well as 4 sumps with unknown contents exist on the site. The Permits database shows that the site has previously stored various chemicals and was reported	It is unknown if contamination has been detected or if releases to the soil or groundwater have occurred at the site.

# 4.6

# Hazards & Hazardous Materials

**TABLE 4.6-1  
POTENTIALLY HAZARDOUS SITES**

Site No.	Site Name	Address	Distance From Project	Description	Hazard Potential
				for causing the disposal of hazardous waste to an unauthorized point in 1998. The Toxic Release Inventory Database (TRIS) also listed the Beckman site.	
<b>Solid Waste Landfill</b>					
3	Palomar Airport Landfill	2016 Palomar Airport Road Carlsbad CA 92008	Adjacent to the green alternative and approx. 0.25 mile from the blue alternative	Three units operated at the Palomar Airport Landfill until 1975 and the site received a total of 830,000 to 1,100,000 tons. Accepted waste included residential, commercial, industrial, agricultural, and pathogenic. The site maintains an operating landfill gas collection system.	Potentially hazardous materials are located in the landfill.
4	Western Flight, Inc.	Carlsbad, CA	Same as above	According to the California Integrated Waste Management Board the San Diego County DEH, the Palomar Airport Landfill contained a leaking UST under the authority of Western Flight Inc. Currently operating three single-wall jet fuel USTs in Carlsbad, Western flight reported two releases to soil (1990, 1992) and a release to water (1987).	Potentially hazardous materials are located in or adjacent to this site.
<b>Leaking Underground Storage Tanks</b>					
5	Hoehn Motors	5556 Paseo del Norte, Carlsbad CA 92008	Within 0.05 mile of the yellow alternative	This site contains underground storage tanks that have either had releases that impacted the soil, impacted groundwater with no beneficial uses, or had a tank fail a leak test.	The County closed this file; however, potentially hazardous residual contamination may remain.
6	Toyota Carlsbad	5124 Paseo del Norte, Carlsbad CA 92008	Same as above	Same as above	Same as above
7	North County Regional Center	325 S. Melrose Drive, Vista CA 92081	Within 0.05 mile of the blue alternative	Same as above	Same as above

## 4.6

## Hazards & Hazardous Materials

**TABLE 4.6-1  
POTENTIALLY HAZARDOUS SITES**

Site No.	Site Name	Address	Distance From Project	Description	Hazard Potential
8	Texaco Station	1580 S. Melrose Drive, Vista CA 92081	0.01 mile from the blue alternative	Leaking underground storage tank with reported releases to soil only and is undergoing either site assessment or remedial action phases.	Potentially hazardous materials may be located in the soil on or adjacent to the site.
9	Norman Levine	1120 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
10	Hobie Cat	4925 Oceanside Boulevard, Oceanside CA 92056	0.25 mile from the blue alternative	Records do not indicate that a release of hazardous materials occurred; however, the site is in the remedial action phase. This is a conflict of information.	Due to remedial action taking place, there is potential for hazardous materials in or adjacent to the site.
11	North County Lincoln Mercury	5434 Paseo del Norte, Carlsbad CA 92008	Between 0 and 0.09 mile from the blue alternative	Reported leaking from underground storage tanks that impacted the groundwater.	Potential for contaminated groundwater on or adjacent to the site.
12	Wesleoh Chevrolet	5335 Paseo del Norte, Carlsbad CA 92008	Between 0 and 0.09 mile from the yellow alternative	Same as above	Same as above
13	Shadowridge Texaco	1590 S. Melrose Drive, Vista CA 92081	Between 0 and 0.09 mile from the blue alternative	Same as above	Same as above
14	Breeze Hill Ranch Construction	333 S. Melrose Drive, Vista CA 92081	Same as above	Same as above	Same as above
15	Texaco Station	210 S. Melrose Drive, Vista CA 92081	Same as above	Same as above	Same as above
16	City of Vista Fire Station	175 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
17	State Farm Service Center (former)	145 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
18	7-Eleven	470 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
19	An abandoned service station	485 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above

# 4.6

# Hazards & Hazardous Materials

**TABLE 4.6-1  
POTENTIALLY HAZARDOUS SITES**

Site No.	Site Name	Address	Distance From Project	Description	Hazard Potential
<b>Permits Sites</b>					
20	Hoehn Audi	5215 Car Country Drive, Carlsbad, CA 92008	Within 0.125 mile of the yellow alternative	Received notices of violation for causing the disposal of hazardous waste to an unauthorized location or for storing hazardous waste in dilapidated containers.	A release of hazardous materials to soil or groundwater has not been indicated, however, such a release is possible with poor storage conditions and disposal methods.
21	Plaza Automotive	1060 Auto Center, Carlsbad, CA 92008	Same as above	Same as above	Same as above
22	Legoland	1 Lego Drive, Carlsbad CA 92008	Same as above	Same as above	Same as above
23	Chicago Brothers Printing 2	195 Faraday Avenue, Carlsbad, CA 92008	Within 0.125 mile of the blue alternative	Same as above	Same as above
24	International Digital Tech	5923 Farnsworth Court, Carlsbad CA 92008	Same as above	Same as above	Same as above
25	Mardx Diagnostics	5919 Farnsworth Court, Carlsbad CA 92008	Same as above	Same as above	Same as above
26	El Camino Rental	5701 El Camino Real, Carlsbad, CA 92008	Same as above	Same as above	Same as above
27	Carlsbad City Fleet Maintenance	2480 Impala Drive, Carlsbad, CA 92008	Same as above	Same as above	Same as above
28	Max Cleaners	3529 Cannon Road, Oceanside, CA 92056	Same as above	Same as above	Same as above
29	Orlimar Golf	1385 Park Center Drive, Vista CA 92081	Within 0.125 miles of the blue alternative	Same as above	Same as above
30	Palomar Technologies	2230 Oak Ridge Way, Vista CA 92081	Same as above	Same as above	Same as above
31	Vista Industrial Products, Inc.	1395 Park Center Drive, Vista CA 92081	Same as above	Same as above	Same as above
32	Bazooka Racing	1338 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above

## 4.6

## Hazards & Hazardous Materials

**TABLE 4.6-1  
POTENTIALLY HAZARDOUS SITES**

Site No.	Site Name	Address	Distance From Project	Description	Hazard Potential
33	Creative Printing	1132 N. Melrose Drive, Vista, CA 92083	Same as above	Same as above	Same as above
34	Euro Pacific	1210 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
35	JL Brentwood Automotive	1146 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
36	Tom Kennedy Auto Repair	1330 N. Melrose Drive, Vista CA 92083	Same as above	Same as above	Same as above
37	Hoehn Honda	5454 Paseo del Norte, Carlsbad, CA 92008	Within 0.125 mile of the yellow alternative	Same as above	Same as above
38	Bob Baker Jeep-Eagle/Hyundai	5555 Car County Drive, Carlsbad CA 92008	Same as above	Same as above	Same as above
39	Worthington Dodge	5365 Car County Drive, Carlsbad CA 92008	Same as above	Same as above	Same as above
40	Bob Baker Mitsubishi	5515 Car County Drive, Carlsbad CA 92008	Same as above	Same as above	Same as above

Source: Dudek, 2004

\* The project and surrounding mapped sites are not currently on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Two sites, Burroughs Corp and Beckman Instruments, were identified on the Cortese database and later removed.

### *Emergency Plans*

The City of Carlsbad has adopted the City of Carlsbad Emergency Plan, which addresses the City's planned response to extraordinary emergency situations. The Emergency Plan identifies primary road arterials to move people in the event of an emergency. These arterials are: El Camino Real, Carlsbad Boulevard, La Costa Avenue, Rancho Santa Fe Road, and Carlsbad Village Drive. Carlsbad Boulevard is in the vicinity of the plant site, and El Camino Real is in the vicinity of the offsite pipeline areas.

*Wildfire Hazard*

The plant site and majority of the offsite pipelines would be located within developed areas and roadways. However, portions of the proposed pipelines are located within and adjacent to open space areas with potentially flammable materials such as brush, grass, or trees.

**4.6.2 Significance Criteria**

The project components would have a significant effect related to hazards and hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or environment;
- For a project within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan



### 4.6.3 Impacts

#### Hazards and Hazardous Materials

##### On-Site

##### *Short Term Construction-Related Impacts*

Construction of the proposed desalination plant will not involve extensive excavation or soil removal, and therefore, it is not anticipated that exposure of potentially contaminated soils or groundwater would result from construction activities. Project construction would remove an existing fuel oil storage tank, and through that process will remediate any potential fuel contamination. Demolition activities will be required to adhere to appropriate regulatory requirements of the Occupational Safety and Health Administration to protect workers from exposure to potential hazards. Additionally, the ultimate disposition of demolition debris that may contain hazardous materials will be required to adhere to applicable local, state and federal regulations regarding disposal. Therefore, project construction is not anticipated to result in exposure of people to potential hazards or result in release or upset associated with any hazardous substances, and impacts are considered to be less than significant.

##### *Operational Impacts*

As described in *Section 3.0, Project Description*, operation of the desalination plant will involve the storage and use of chemical cleaning solutions to remove deposits from the reverse osmosis membranes that could reduce membrane performance, as well as chemicals used to treat product water. The following discussion describes the type of chemicals to be used and the potentials hazards associated with them.

Each membrane RO train would be cleaned on average two times per year. During cleaning, the membrane train is taken out of service and cleaning solution is circulated through the membranes to remove the accumulated fouling materials. In addition, chemicals will be used for cleaning of pretreatment facilities. Chemicals that are anticipated to be used for membrane cleaning include:

- Citric Acid - (2% solution)
- Sodium Hydroxide B (0.1% solution)
- Sodium Tripolyphosphate B (2 % solution)
- Sodium Dodecylbenzene B (0.25% solution)
- Sulfuric acid B (0.1% solution).

The chemicals listed above are non-flammable and will be stored, and used at the treatment plant site in quantities which are below the threshold quantity (TQ) levels, defined by the applicable federal, state and local hazardous materials handling and management regulations, at which they would present a potential for a significant hazard to the public or environment. The maximum volume of citric acid, sulfuric acid and sodium hydroxide, which will be stored on site in liquid form, will be 50 gallons. This volume is below the minimum threshold quantity of 55 gallons defined by the applicable hazardous materials management regulations. The sodium tripolyphosphate B and sodium dodecylbenzene B will be delivered and stored in a solid form and the maximum amount of these chemicals stored on site would be 480 lbs, which is below the most-stringent threshold quantity for storing solid hazardous materials (500 lbs).

Mixing of the membrane cleaning chemicals at the indicated concentrations will not generate flammable substances nor a significant amount of hazardous vapor emissions. All of the chemicals listed above will be stored in the Membrane Cleaning (CIP) room of the Reverse Osmosis Building of the desalination plant and will be used and stored on site only while membrane cleaning is completed. This room will have an automatic sprinkler system for fire control, and spill containment and control provisions in the storage, handling and dispensing area of the room.

### **Water Treatment Materials**

In addition to the RO membrane cleaning chemicals, a number of additional chemicals for water treatment will be used, stored, and handled on-site continuously (refer to *Table 4.6-2, Water Treatment Chemical Usage Summary*). The project will comply with all applicable laws and regulations to minimize the potential for a release of hazardous materials and will conduct emergency response planning to address public health concerns regarding hazardous materials storage. The chemicals will be delivered to the project site by truck, and will be stored in tanks that meet applicable regulatory requirements. The tanks will be constructed of appropriate, non-reactive materials, compatible with the recommendations of the supplier of the hazardous material. The tanks will be located adjacent to the reverse osmosis building within concrete block wall enclosures that include spill containment capacities that exceed the capacity of the tanks, and each structure would be separated or divided from other chemicals to prevent mixing in the case of accidental spillage. The chemicals will be stored in aqueous (liquid) form and in concentrations that will reduce the risk of volatility. Chemicals that have specific reactivity risks with one another, such as Sodium Hypochlorite and Ammonia, will be stored at opposite ends of the storage area to maximize separation and minimize risk of mixing. The containment structures would prevent release of the chemicals prior to response and cleanup in the event of a spill.

## 4.6

## Hazards & Hazardous Materials

**TABLE 4.6-2  
WATER TREATMENT CHEMICAL USAGE SUMMARY**

Chemical	Purpose	Normal Concentration	Chemical (lb/day)	Solution (gal/day)	Day Tank Capacity (gallons)	Bulk Storage Capacity* (gallons)
Sodium Hypochlorite	Prevent Biological Growth	12%	1,542	1,541	2,000	10,000
Ferric Sulfate	Enhance Filter Performance	70%	15,420	2,641	N/A	40,000
Polymer	Enhance Filter Performance	0.5%	385	9,244	10,000	5,000 lbs.
Sulfuric Acid	Positive LSI to Membranes	20%	24,672	3,215	4,000	60,000
Sodium Bisulfate	Remove Chlorine	20%	4,626	2,773	3,000	30,000
Carbon Dioxide	Stabilize Product Water	100%	12,540	NA	NA	38,000
Lime	Stabilize Product Water	15%	11,676	9,333	10,000	200,000
Sodium Hypochlorite	Disinfection	12%	667	667	1,000	10,000
Ammonia	Disinfection	10%	206	276	300	3,000

Source: Poseidon Resources Corporation.

\* Bulk storage capacities are based on the amount of storage capacity necessary for two weeks of operation at proper design dosage rates.

### Toxic Chemical Plume Release Risks

Typically, onsite storage of disinfection chemicals (chlorine and ammonia) presents the greatest potential for toxic vapor plume release and associated public health risk due to the chemical properties of these disinfectants. Based on the criteria established by the applicable hazardous materials handling regulations and the chemical properties provided in the material safety data sheets (MSDS), all other chemicals listed in *Table 4.6-2* are in a liquid form, are not flammable, and do not generate significant amount of vapors to create potential public health risk.

Chlorine vapor plume formation of a size which may present public health hazard is only possible when chlorine is stored and used in gaseous form. In order to eliminate the potential for formation and release of toxic chlorine gas plume, and thereby to avoid the public risk associated with the use of chlorine at the desalination plant, the Applicant will use and store chlorine only in the form of liquid bleach (sodium hypochlorite) solution instead of in the form of gas. A catastrophic spill of the entire 10,000 gallon volume of liquid sodium hypochlorite stored on site will not generate chlorine

vapors of concentration high enough to form a gaseous plume that presents a public health hazard because of the high solubility of chlorine in water, and because of the low concentration of this chemical (only 10 to 15 %) in the bleach solution.

On-site use and storage of ammonia, required for chloramination of the desalinated water, presents another potential source of toxic vapor plume formation and release. Ammonia can be stored on site in a 100% concentrated anhydrous form or in a liquid form as aqua ammonia (ammonium hydroxide). While ammonia is more cost-effective to store in a concentrated anhydrous form, under catastrophic event, anhydrous ammonia presents a significantly higher potential for generation of vapor plume that may become a public health hazard. Aqua ammonia, which is a commercially available in a water solution of 10% to 29%, presents significantly lower risk for toxic plume release. According to the Clean Air Act Regulations (40 CFR 68, Section 112(r)), the threshold of aqua ammonia above which this chemical presents a risk for formation of toxic plume is 20,000 gallons of solution, and use of aqua ammonia of concentration that exceeds 20 %. As indicated in *Table 4.6-2*, the Applicant plans to store only up to 3,000 gallons of aqua ammonia of concentration of 10 %. Both aqua ammonia volume and concentration are significantly lower than the threshold levels at which ammonia storage may present a public health hazard due to accidental spill of the entire amount of aqua ammonia stored on site.

### **Fire and Explosion Risks**

All chemicals planned to be used at the treatment plant site (see *Table 4.6-2*) are nonflammable with exception of aqua ammonia. The aqua ammonia liquid is incombustible; however the vapor released from the liquid is combustible but difficult to burn and does not present an explosion risk. Under normal storage conditions, ammonia would not evaporate to the atmosphere because it would be contained within a totally enclosed system. In the unlikely event that a release were to occur, ammonia could evaporate as vapor. Ammonia vapor is combustible only within a narrow range of concentrations in the air. The evaporation rate and concentration of the aqua ammonia is sufficiently low that the lower explosion limit (LEL) will not be reached. The storage and use of ammonia would be subject to the requirements of the California Fire Code, Article 80, as well as the California Accidental Release Program (CalAPR). Article 80 of the California Fire Code contains specific requirements of control of liquid and gaseous releases of hazardous materials. Secondary containment in the form of an underground spill containment vault will be provided for the ammonia storage tank and loading area.

Although the individual chemicals may not present significant fire and explosion hazards, some of the chemicals are incompatible and their accidental mixing due to human errors or catastrophic events may present a fire or explosion risk. The following chemicals are incompatible when mixed and their mixing may result in excessive emissions of heat or volatile hazardous substances:

- Sodium Hypochlorite – incompatible and reactive with ammonia, ferric sulfate and polymers;
- Ferric Sulfate – incompatible with sodium hypochlorite;
- Polymer – incompatible with sodium hypochlorite;
- Sulfuric Acid – reacts violently with water;
- Sodium Bisulfite – incompatible with sulfuric acid and sodium hypochlorite;
- Carbon Dioxide – no incompatibility;
- Lime – no incompatibility (stored in dry form);
- Ammonia – incompatible with sulfuric acid and sodium hypochlorite.

With proper storage and handling of the hazardous materials in accordance with the California Fire Code and the city ordinances, the risk of fire and explosion at the water treatment plant would be minimal. As previously noted, the storage tanks of the incompatible chemicals will be located away from each other as much as practical to minimize the potential for mixing during catastrophic events.

### **Odor Release Potential**

The two chemicals stored on site which have an odor release potential are sodium hypochlorite and ammonia. Both chemicals will be stored in completely enclosed storage and conveyance vessels and piping. All of their piping will be with a double containment, which will reduce the potential for odor release. Typically, chlorine stored in a gaseous form and anhydrous ammonia are more significant potential source of odors to the neighboring residential developments, than bleach and aqua ammonia because the accidental gas releases are of very concentrated form – the stored chlorine gas and anhydrous ammonia contain 100 % concentrated chemical. The ammonia and chlorine liquid solutions which are proposed to be used by the project have only 10 to 15 % of concentrated chemicals (i.e. have 10 times lower concentration of the chemical). In addition, the time and speed of release of the chlorine gas from a storage tank is significantly faster than that of that from bleach storage tank, because the chlorine storage tank (cylinder) is under pressure, while the aqua ammonia and sodium hypochlorite are not stored under pressure.

Under normal operations the vapors that can potentially be released from the chemical storage tanks can be evacuated only through the tank pressure relief valve and vent. In order to eliminate to potential for odor release from the storage tanks the vents of these tanks will be equipped with carbon filters to absorb the odorous gases released inside the tanks during chemical storage.

Project features that are designed to reduce risks associated with chemical use and storage, combined with regulatory requirements for safe handling and storage of materials will minimize hazards associated with plant operation. As such, it is not anticipated that the project would create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or create a significant hazard to the public or environment through reasonably

foreseeable upset and accident conditions involving the release of hazardous materials into the environment. In addition, the project site is not within one-quarter mile of an existing or proposed school. Therefore, impacts in regards to the long-term operational use, storage, and transport of hazardous materials involved in desalination facility operation would be less than significant. However, although impacts associated with hazards are considered to be less than significant with the facility design and proposed operational measures, mitigation measures are included to ensure that these project features and operational practices are maintained.

### **Off-Site**

Construction of the off-site pipeline would require grading and trenching activities that could potentially disturb and release hazardous materials into the environment from 40 sites (see *Table 4.6-1*) in proximity to the construction areas for the pipelines. Potential for release or exposure of existing subsurface contamination could result from project construction activities. Impacts from a potential release of hazardous materials into the environment are considered to be significant and require mitigation.

Operation of the offsite pipeline areas would convey potable water through the pipelines, which would not pose a hazardous risk to the public or the environment and impacts would be less than significant.

### ***Airport Safety Hazard***

As discussed above under Existing Conditions, several of the offsite pipeline areas would be located within the Palomar-McClellan Airport Influence Area; some portions of the pipelines would also be located in the Flight Activity Zone and Runway Protection Zone. The project does not involve any long-term operational features that would result in an airport safety hazard for people residing or working in the project area. Construction activities for the segments of alternative pipeline alignments located at and near Palomar-McClellan Airport would need to be coordinated with airport operations to avoid presenting a potential hazard to airport and aircraft operations. Mitigation measure 4.8-1 in *Section 4.8, Land Use/Planning*, ensures the necessary coordination will occur.

### ***Emergency Response Plans***

During operation of the project, the use, storage, transportation, and disposal of hazardous materials would be conducted in accordance with local, state and federal regulatory requirements. In order to reduce the potential for construction traffic conflicts with the City of Carlsbad Emergency Plan, a traffic control plan would be developed as part of the project, as described in *Section 4.10, Transportation and Traffic*. With incorporation of the traffic control plan and adherence to

applicable regulations, the project would not significantly impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

#### 4.6.4 Mitigation Measures

4.8-1 4.6-1 To mitigate the potential for exposure of existing contamination during construction of offsite pipelines, construction monitoring will be provided in areas identified as having the potential for such risks, and appropriate actions, as determined by the City's construction inspector shall be taken if such materials are encountered. Such actions may include avoidance or removal of contaminated materials, or special handling measures to avoid exposure to materials.

4.8-2 4.6-2 In accordance with all applicable federal, state and local regulations, plant personnel shall regularly inspect all hazardous materials handling facilities for compliance with applicable regulations and shall ensure that any deficiencies are promptly repaired. In addition, the facility shall be subject to regular inspections by the County Department of Public Health and City's Fire Department, which will ensure compliance with appropriate regulatory requirements for hazardous materials and regulated substances handling.

4.8-3 4.6-3 All hazardous materials shall be handled ~~and~~ stored, transported and disposed in accordance with all applicable federal, state and local codes and regulations. 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 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 noncombustible partition.
- Location of incompatible materials as far away from each other as practical.
- Spill control in all storage, handling and dispensing areas;
- Separate secondary containment for each liquid chemical storage system. The secondary containment shall be designed to hold 110 % of the entire contents of the tank. ~~The secondary containment for the cleaning chemicals located inside the RO building shall have an extra volume~~ Adequate storage shall be provided inside the RO building to hold ~~the~~ 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. The secondary containment of the chemical storage tanks located outside the RO building shall have extra storage capacity to hold precipitation from a 25-year, 24-hour event.



- Use of chlorine in liquid form (sodium hypochlorite) to mitigate concerns associated with accidental toxic gas plume releases and potential odor emissions from the chlorine storage facility;
- Use of aqua ammonia of concentration below the regulatory threshold limit of 20 % and amount below the regulatory threshold of 20,000 gallons to mitigate concerns associated with accidental release of significant toxic ammonia gas plume releases.
- All liquid chemical storage tanks shall be equipped with a pressure relief valve, vapor equalization, a carbon filter vent, and vacuum breaker. Any potential vapor fume releases from the storage tanks shall be absorbed by the carbon filter vent, thereby providing an effective odor control for volatile chemicals, such as ammonia and chlorine.

**4.8-4 4.6-4** Each of the liquid chemicals used on site shall be stored in a tank with a concrete secondary containment surrounding the tank. The containment area shall have a sloped floor, which shall direct the liquid to a drain centered below the tank. This drain shall lead to a covered sump. Each of the chemical storage tanks shall be equipped with continuous level monitors, automated leak detection system, temperature and pressure monitors and alarms, and excess flow and emergency block valves. All storage tanks shall be constructed of appropriate, non-reactive materials, compatible with the recommendations of the supplier of the hazardous material.

**4.8-5 4.6-5** In the event of an accidental liquid chemical spill, the chemical shall be contained within the concrete containment structure and evacuated through an individual drainage system, and pumped into hazardous waste containment trucks and transported off-site for disposal at an appropriate facility accepting such waste. This operation shall be completed by a specialized contractor licensed in hazardous waste handling and disposal. Appropriate agencies, such as the City of Carlsbad Fire and Police Departments, shall also be contacted if necessary.

**4.8-6 4.6-6** The chemical conveyance piping system connecting chemicals from their storage areas to their points of application shall be protected from leaks utilizing one of the following leak protection measures:

- Use of piping with double containment walls to prevent potential chemical leaks from reaching the soil or groundwater; and
- Installation of chemical conveyance and feed pipelines in designated plastic or concrete trenches that will contain potential leaks and drain the leaking chemical(s) to a designated containment sump or tank, from where the chemical(s) will be



evacuated and disposed of in compliance with all applicable federal, state, and local codes.

~~4.8-7~~ **4.6-7** Appropriate safety programs shall be developed addressing hazardous materials storage locations, emergency response procedures, employee training requirements, hazard recognition, fire safety, first aid/emergency medical procedures, hazard communication training, and release reporting requirements. These programs shall include a Hazardous Materials Business Plan, worker safety program, fire response program, a plant safety program, and the facility's standard operating procedures. The project shall also be in compliance with all applicable hazardous material storage and management regulations and shall prepare all safety planning documentation associated with compliance with these regulations. For security purposes, the desalination facility would allow site access to authorized personnel only via a secured entry point with a 24-hour guard.

#### **4.6.5 Unavoidable Significant Impacts**

With implementation of project design features, required regulatory controls and mitigation measures, project impacts relating to hazards and hazardous materials would be less than significant.