F. PUBLIC HEALTH

This Public Health section and Section 4.G. *Public Safety* make up the typical CEQA analysis area know as Hazards and Hazardous Materials. In this EIR, to provide clarity and ease of understanding, the Hazards and Hazardous Materials discussion is separated into two sections. This section evaluates public health risks that could result from exposure to toxic chemicals, as a result of the proposed sale and future development of the lots proposed for sale. The analysis also considers potential exposure to chemicals in the soil, soil vapor, and groundwater at the 36 lots proposed for sale. Abandoned wells on the lots and gas storage in the PDR field were considered when evaluating public health risks.

ENVIRONMENTAL SETTING

The environmental setting describes the types of existing gaseous chemicals at the 36 lots and the ways in which the chemicals may migrate through these lots and surrounding properties.

TYPES OF GASES

There are three types of gas that may exist within the geological and soil units underlying the project area: biogenic (or swamp) gas, thermogenic (field) gas, and processed natural gas (or piped gas). Biogenic gas is primarily methane with carbon dioxide and sulfide gases that result from decomposition of organic material in former lagoon deposits or other sources. Biogenic gas contains mostly methane and carbon dioxide with smaller amounts of ethane, propane, and butane. These biogenic gases are not toxic at low (ppm) levels; however, they act as asphyxiants at high concentrations. Biogenic gases contain trace quantities of other chemicals which are toxic at low levels (in the ppm range), including benzene, toluene, ethyl benzene, and xylene (BTEX). These (BTEX) are addressed in the human health risk assessment (HHRA) that was conducted for this project (see Appendix E). Methane and other asphyxiants are considered in Section 4.G, *Public Safety*. If there is sulfur present in the decomposing organic matter, these gases may also contain trace quantities of hydrogen sulfide.

Thermogenic gas is generated at depth when increased temperatures and pressures alter organic material. Similar to biogenic gas, thermogenic gas contains a broad range of gas components including methane, ethane, propane, and butane, as well as trace amounts of toxic gases, including hydrogen sulfide. The HHRA addresses the trace toxic gases, and Section 4.G, *Public Safety*, deals with the other gases which act as asphyxiants or present safety risks (explosion or fire).

In contrast to the biogenic gases and the thermogenic gases, processed natural gas is primarily methane that remains from thermogenic gas after most of the heavier gas components, including the toxic substances, are removed (usually less than 0.1 percent heavy thermogenic hydrocarbons). Processed natural gas is analyzed in the Section 4.G, *Public Safety*.

The gas types described above exhibit distinct chemical characteristics, which permit “finger-printing” or differentiation between gas types. In addition to lacking heavier gas components (propane, butane, ethane, etc.), the presence of helium in detectible amounts is a primary fingerprint for natural gas imported from the central United States and previously stored in the deep storage zone.

MIGRATION PATHWAYS

Natural gas of biogenic, thermogenic, and storage sources can migrate through the subsurface soil both vertically and laterally. Natural gas has been detected at the surface in the PDR area in the past, and both biogenic and thermogenic gases were detected in a soil gas survey conducted by ETI (2000) at the Playa Vista area just north of the PDR lots. In a second phase of the same Playa Vista project field study (ETI, 2001), storage gases were not observed in any of the measurements east of Lincoln Boulevard. Since these studies are inconclusive with regard to the distribution of underground gas levels in the project area, a new field measurement study was undertaken for this EIR analysis.

MAJOR PATHWAYS

Natural gas of biogenic, thermogenic, and storage sources can travel through a variety of man-made structures to migrate both vertically and laterally through the subsurface. A list of the most common man-made structures that could serve as vertical conduits include:

- Old abandoned oil and gas wells or dry holes
- Previously undocumented wells and dry holes
- Existing water extraction or injection wells
- Old abandoned water wells
- Monitoring wells
- Recently plugged and abandoned oil and gas wells (abandoned in accordance with current DOGGR regulations).

In addition to oil and gas wells, both active and abandoned water wells can serve as vertical conduits, especially in the upper 1,000 feet of geological section. Utility trenches, storm drain systems, and sewer lines provide lateral migration pathways, accumulation areas, and near-surface openings for natural gas release.

Gas can also reach the surface through natural geologic features, which may facilitate vertical, lateral, or oblique migration. The geologic features most likely to serve as potential pathways include:

- Surficial deposits
- Porous and permeable formations
- Aquifers

- Fracture systems
- Fault planes
- Other geologic features and structures, such as unconformities

The potential for gas migration to reach the surface is considered to be the greatest through or along man-made structures. In general, geologic pathways are relatively "tight" in the "shallow" and storage zones. Fractures, faults, and spaces between individual grains are minimized due to the tremendous overburden pressure (the weight of the rock materials). Within the project area, wells penetrate shallow and deep gas zones at various depths. Once penetrated, a poorly constructed or abandoned well can serve as a conduit for upward migration of natural gas. Even when proper construction and abandonment methods have been applied, such conduits can develop as old wells deteriorate (over 70 years).

NATURAL PATHWAYS

Gas can migrate naturally through fissures and cracks that have formed from faults in the region Section 4.E, *Geology and Soils* presents a full description of faults in the vicinity of PDR and MDR.

Abandoned Wells

Several factors, such as original drilling, development and completion, operations and redevelopment, and abandonment, contribute to possible gas migrations through abandoned and active wells. Historically, many wells and dry holes were drilled in the Los Angeles Basin during the exploration and early oil field development period; these dry or non-commercial wells were typically abandoned. Many of these wells and dry holes have a high potential to provide migration pathways because they may not have been abandoned in compliance with present current requirements and standards. All 12 wells associated with the lots proposed for sale were abandoned after 1956; most were abandoned in the early 1990s (see **Table 3-1**) in compliance with current requirements and standards.

Wells Leaks

Well construction, redevelopment, and abandonment deficiencies can contribute to gas migration. If cement bonds between the casing and surrounding natural formation do not form adequate storage seals, pressurized leakage is possible. Leakage through the annular space between the casing and formation can occur under the following circumstances: lack of proper seals; inadequate seal or poor cement bonds with bore walls; channels within cement; deterioration of annular seals over time; or fracturing or cavitation of enclosing walls.

When present, shallow high-pressure gas zones can create problems for cement annular seals. During well installation, cement slurry is pumped into the annular space between the hole drilled (rock face) and casing to form a seal. Gas from shallow high-pressure zones can enter cement within the annular space during this process. Gas bubbles within the slurry weaken the cement and can compromise seals around these zones. In turn, poor seals can allow fluid migrations and enhance corrosion of both casing and cement in these areas. If large volumes of gas enter the annular space, vertical channels within the cement seal can also form (Marlow, 1989).

Over extended periods of time the structural integrity of well components and seals can deteriorate. Casings and seals are subject to corrosion caused by exposure to chemical attack, high and fluctuating pressures, high temperatures, and earthquakes. Steel casing is susceptible to rusting from saline and sour/sulfurous water produced along with the oil. Hydrogen sulfide in sour water and sour gas can corrode steel and cement. Differential earth stresses (i.e., local earthquakes) can affect well integrity, even causing casing to collapse. Any deterioration of well integrity can lead to leaks.

REPORTED LEAKING WELLS: SOUTHERN CALIFORNIA GAS

Leaks and surface seepage have been documented in 11 wells in the general PDR and MDR area. Information on these wells and their respective leaks are summarized in **Table 4.F-1**. Of the 10 wells with documented leaks, four are located on the lots proposed for sale: 29-1, Lor Mar 1, Joyce 1 and Troxel 1. Casing leaks in each of the four wells has been repaired. As indicated on **Table 3-1**, Lor Mar 1, Joyce 1, 29-1 and Troxel 1 were plugged and abandoned in 1992, 1993, 1994, and 1994 respectively. There have been no reported leaks in the other eight wells included in the proposed sale.

GAS RESPONSIBILITY AND RIGHTS

SCG owns most mineral rights in the PDR gas storage field and is therefore responsible for any gas leaks originating from the PDR Gas Storage Facility (both aboveground facility and associated operating wells) from thermogenic sources. California Public Resources Code, Section 3251.5 states that if an abandoned well leaks and requires remedial work 15 or more years after it was properly abandoned according to all requirements at the time of abandonment, the state must assume financial responsibility for the remedial work.

UPDATED SITE INVESTIGATION AND MEASUREMENTS

A comprehensive site investigation and measurement program was conducted by Brown and Caldwell to update existing hazardous chemicals conditions at the 36 lots proposed for sale. Total petroleum hydrocarbons (TPH) were measured in the soil and in the soil vapor at the project lots (Brown and Caldwell, 2004). To measure TPH and toxic chemicals that affect human health (BTEX and semivolatile organic chemicals), samples of soil, soil vapor, and groundwater were taken. The 2003 work program consisted of three phases, with each phase building on the previous phase to provide a comprehensive characterization of the properties (Brown and Caldwell, 2004a).

TABLE 4.F-1
SUMMARY OF DETECTED WELL GAS LEAKS

Well Name	Problem	Depth (ft bgs[a])	Year Detected	Well Locations
Well No. 29-1	**Stage collar leak**	**723**	**1959**	**Between Falmouth Avenue & Calabar Avenue, south of intersection with Cabora Drive**
Big Ben 1	Casing leak	150	1964	Between 79th Street & Veraqua Drive, northeast Zayenta Drive
	Surface seepage		1991	
Blackline 1	Casing leak	1,064	1969	South of Cabora Drive, west of Veraqua Drive and Zayenta Drive intersection
	Casing leak	1,060	1986	
SoCal No. 4	Casing leak	3,216	1971	NW of Cabora Drive, about 1,000 ft. NE of intersection with Falmouth Avenue[b]
SoCal No. 3	Casing leak	3,300	1972	NW of Cabora Drive, about 1,000 ft. NE of intersection with Falmouth Avenue[b]
	Casing leak	3,300	1975	
	Casing leak	2,109	1977	
Well No. 12-1	Surface seepage	481	1974	Southeast of 81st Street, north of intersection with 83rd Street
	Casing leak	210	1979	
Well No. 24-2	Surface seepage	191	1975	Northwest of 79th Street, west of Zayanta Drive
Pomoc 1	Casing leak	2,815	1975	West of Zayanta Drive, between 79th St and Cabora Drive
Joyce 1	**Casing leak**	**750**	**1987**	**Northwest of 82nd Street, east of Saran Drive**
Lor Mar 1	**Casing leak**	**720**	**1981**	**South of 83rd Street, east of Saran Drive**
Troxel 1	**Marsh Gas Bubbles**	**<1000**	**1994**	**Union Jack Street and between Speedway Avenue and Venice Beach**

[a] ft bgs – feet below ground surface.
[b] Surface location of directionally drilled well. Bottom hole locations were not made available.

SOURCE: DOGGR, Brown and Caldwell

In Phase 1, conducted in June 2003, soil vapor samples were collected at 133 locations on the 36 lots. Sampling took place at these locations, at depths from 5 to 10 feet, to determine whether soil vapors were present and to identify permanent soil vapor monitoring wells locations for the next phase of the investigation. In Phase 2, conducted in July 2003, soil samples at 34 locations on the project lots, at depths of up to 30 feet below ground surface (bgs) and one boring being 80 feet deep, were collected. Fourteen permanent soil vapor monitoring points were installed; with at least one at each cluster. At Cluster 12, soil samples were collected, groundwater wells were installed, and a soil vapor well was installed. In Phase 3, conducted from August 2003 to December 2003, four vapor sampling events were monitored at 14 semi-permanent soil vapor points. Four groundwater sampling events were also conducted at monitoring wells at Cluster 12 (Brown and Caldwell, 2004a).

Sampling included 86 soil samples; 48 of which were collected at depths of 15 feet bgs or less. Exposure levels were established based on the sampling. Hydrocarbons were detected in 16 of the 48 soil samples. Five samples were analyzed for semivolatile organic chemicals; however, none were found.

To gain soil vapor measurements, 175 samples were taken from temporary vapor sampling locations during the Phase 1, and 56 soil vapor samples were taken from 12 semi-permanent vapor monitoring wells in Phase 3 of the sampling program. Benzene was not detected in any of the temporary vapor sampling locations. The other chemicals, BTEX and TPH as gasoline, were identified in 20 of the semi-permanent vapor samples during Phase 3. No chemicals were detected at Cluster 12.

In Phase 3, four rounds of sampling were conducted over four months during periods of varying temperatures and pressures. The results of the sampling show that in the permanent vapor sampling locations, all chemicals included in the analysis were detected in one or more samples with a frequency ranging from nine percent of the sites detecting benzene to 80 percent detecting toluene.

There were 21 groundwater samples taken from five wells at Cluster 12. BTEX and/or TPH were detected in most of the samples. The results of the sampling are given in Table 5 of Appendix A of the Human Health Risk Assessment conducted by Brown and Caldwell (see Appendix D). Table 5 shows that the measured levels of all of the BTEX species are well below California action levels for drinking water standards, except for benzene (see Appendix D). Four of the 21 samples of benzene were slightly above the action level, and the other 17 samples were below the detection limit. However, these action levels are established for drinking water, and the groundwater at Cluster 12 is brackish that is heavily influenced by the tides and cannot be used for human consumption. Thus, there are no health risks to humans from these measured benzene levels in the groundwater.

APPLICABLE REGULATIONS, PLANS, AND POLICIES

The current regulatory framework relevant to hazards and human health encompasses process risk related to the use of hazardous materials and management of risks from hazardous materials that have been released to the environment. The use, storage, and disposal of hazardous materials and wastes are regulated through a network of overlapping federal, state, and local laws and regulations. Various government agencies are responsible for implementing these laws and enforcing their requirements.

FEDERAL

Federal and state laws require planning to ensure that hazardous materials are properly used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to reduce injuries to human health, safety, or the environment. Businesses must store hazardous materials appropriately and train employees to manage them safely. Hazardous waste laws impose cradle-to-grave liability, requiring generators of hazardous wastes to handle them in a manner that protects human health and the environment to the extent possible. Since Federal jurisdiction related to hazardous waste in California has been delegated to the State, and regulation is covered by the state rules which are described below.

STATE

California Code of Regulations Title 22

Title 22 of the California Code of Regulations defines, categorizes, and lists hazardous materials and wastes. Title 22 defines a hazardous material as:

> "a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (2) pose a substantial present of potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed."

Hazardous wastes are categorized in Title 22 as either hazardous wastes, as defined in the Resource Conservation and Recovery Act (RCRA) or non-RCRA hazardous wastes. Title 22 lists chemicals that are presumed to make a material or waste hazardous to the environment. The chemicals measured in both the soil and groundwater (benzene, toluene, and xylene) are all on the list of hazardous materials, as identified in Section 66261.126 of Title 22.

California Water Code (CWC)

The California Water Code (CWC) includes provisions of the federal Clean Water Act (CWA) and water quality programs specific to California. The CWC requires reporting, investigation, and cleanup of hazardous material releases that could affect waters of the state (including storm waters).

California Aboveground Petroleum Storage Act

The California Aboveground Petroleum Storage Act, implemented by the Regional Water Quality Control Boards (RWQCBs), regulates the storage of petroleum in aboveground storage tanks (ASTs) and requires construction methods and monitoring to prevent petroleum releases.

California Health and Safety Code Section 25534

Section 25534 of the California Health and Safety Code requires businesses that handle amounts of acutely hazardous materials (AHMs) in excess of certain quantities to develop a risk management plan (RMP). The RMP encompasses process hazards, potential consequences of releases, documentation, auditing, and training relative to the AHMs that are above specified threshold quantities at the generating station. Regulated AHMs may include aqueous ammonia and sulfuric acid, as well as other acutely hazardous substances.

California Department of Conservation, Division of Oil, Gas and Geothermal Resources and CPUC

Physical hazards, storage field maintenance and operations within the PDR Gas Storage Facility are under the jurisdiction of DOGGR and the CPUC. DOGGR regulates the operations and maintenance of natural gas storage fields the CPUC regulates aboveground offsite piping. DOGGR manages oil and gas resources in California, including the PDR gas storage field. The City of Los Angeles has local responsibility and authority through land use permitting and zoning for both oil and gas production and quarry and mining operations. The City also has zoning jurisdiction through special use permits and overlays for oil and gas.

The Regulations require that DOGGR inspectors look for indications of any type of oil or gas leaks from wells, pipelines, pressure vessels, and tanks. They also witness testing of the automatic shut down equipment on each well. Storage project performance reviews take place annually. During these reviews, DOGGR engineers examine SCG records to ensure that all well and reservoir monitoring and leak survey requirements are met.

Well Abandonment Regulations and Policies

DOGGR has adopted regulations[1] for safe and effective well abandonment (see Appendix F). These regulations provide well abandonment procedures that prevent future migration of oil or gas from the producing zone and the upper zones, as well as protect groundwater. Furthermore, DOGGR ensures that public safety is not endangered. DOGGR has the expertise and the authority to require steps deemed necessary to protect public safety, up to and including requiring facilities to cease operations and/or remove all gas from a field.

After subsurface abandonment is completed and surface portions of a well are removed, the owner of the well must test and remove soil that has been contaminated by oil or other well maintenance substances. At the end of abandonment operations, DOGGR completes a final inspection of the

[1] These regulations can be found in California Code of Regulations, Title 14, Chapter 4, see Appendix F.

well site. After this inspection, DOGGR reviews all of the abandonment records of the operator and provides a final abandonment approval or a notice of deficiency that must be corrected.

Significance Levels Established by Regulations

Several state regulations have established levels of TACs above which certain actions should be taken. These actions may be equivalent to the definition of significance thresholds under CEQA, and are described below.

Air Toxics "Hot Spots" Bill AB2588

Assembly Bill AB2588, the Air Toxics "Hot Spots" Information and Assessment Act, requires that facilities emitting Toxic Air Contaminants (TACs) above specified thresholds to prepare a health risk assessment, and if the cancer risk threshold of 10 in 1 million is exceeded off the property or the Hazard Index of one is exceeded, the results of the risk assessment must be communicated to the public in the form of notices and public meetings. The proposed sale and future development would not be considered a facility under the definition contained in the Regulation, and it would not be subject to AB2588. However, the cancer risk threshold defined by the regulation can be used as a CEQA significance threshold for this proposed sale. This same threshold has been applied to other CEQA projects by local air pollution control agencies in the State.

Proposition 65

Proposition 65, also known as the Safe Drinking Water and Toxic Enforcement Act of 1986, prohibits businesses with ten or more employees from knowingly discharging any chemical listed as "known to the State of California to cause cancer or reproductive toxicity" to a source of drinking water, and requires that such businesses provide a clear and reasonable warning prior to exposing any persons to a listed chemical. Similar to the AB2588 Regulation, the threshold for warning is 10 in 1 million for carcinogens and a hazard index of 1.0 for non-carcinogens.

Regulations Regarding Building Construction over Abandoned Wells

Future development of the lots proposed for sale would be subject to the requirements of the City of Los Angeles Building Code and would include compliance with all requirements for construction over abandoned wells**.** The regulatory requirements for building over abandoned wells are discussed in Section 4.E, *Geology and Soils*.

SIGNIFICANCE CRITERIA

Adverse public health affects are determined based on cancer risk caused by exposure to Toxic Air Contaminants (TACs) and other adverse health risks caused by exposure to non-carcinogenic TACs (see also Section 4.A, *Air Quality*). Cancer risks are expressed as increased chances in a million of contracting cancer from exposure to chemicals from the project. The accepted significance threshold for the maximum incremental cancer risk from a project is 10 in 1 million.

This includes the regulation under AB2588, as well as Proposition 65. Also CEQA guidelines for several air districts in the state, such as the Bay Area Air Quality Management District, recommend a significance threshold of 10 in 1 million.

Non-cancer adverse health risks are measured against a hazard index, which is the ratio of the predicted exposure concentration to a threshold level, which could cause adverse health effects, as established by the Cal/EPA's Office of Environmental Health and Hazard Assessment (OEHHA). The ratio (Hazard Index or HI) of each non-carcinogenic substance affecting a certain organ system is added to the calculated Hazard Indices of the other non-carcinogens to produce an overall Hazard Index for that organ system. Overall Hazard Indices are calculated for each organ system. If the overall Hazard Index for the highest-impacted organ system exceeds one, then the impact would be significant. The Hazard Index significance threshold of one is defined in CEQA Guidelines in several air districts and is consistent with the value requiring public notification in the AB 2588 regulation and Proposition 65.

ENVIRONMENTAL IMPACTS AND MITIGATION

Impact F.1: Development and occupation of the lots proposed for sale could result in impacts to public health. (Less than significant)

This impact refers to the potential for exposure to toxic air contaminants under normal conditions. The impacts from potential accidents and hazards are addressed in the Section IV.G, *Public Safety*. Impacts to public health would result from development of the lots proposed for sale. During future construction, emissions of diesel particulate matter (DPM) from the construction equipment would result in increased exposure levels of DPM near the construction activities. However, these emissions would be temporary and would not contribute significantly to chronic long-term exposure levels of DPM. In addition, compared to existing equipment, emissions of DPM from engines in the future would be reduced considerably (by up to 90 percent) because strict regulations are being enacted for new equipment.

During construction, there is the potential for exposure to contaminants that may be contained in the soil during excavation activities. Similarly the levels of chemicals that future residents of the lots could be exposed to were estimated from the measured concentration of each chemical reported in the site assessment. The highest concentration for each chemical was used, regardless of location. This would result in the estimation of a maximum possible health risk. The maximum concentrations for assessing health risks are reported in the HHRA (see Appendix E).

From these measurements, a hypothetical lot was created that contains the highest measured concentration of each chemical. This approach resulted in an upper-bound estimate of a possible worst case exposure since exposure at any individual lot would be lower.

Public health risks associated with the proposed sale and future development include the carcinogenic or adverse non-carcinogenic health effects in the community that result from exposure to TACs. Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances, and is expressed as the increased chance of contracting cancer. More than one exposure pathway (i.e., inhalation, dermal contact, ingestion of contaminated soil, etc.) is incorporated in a health risk assessment. As stated above, the CEQA significance threshold for cancer risk is established at 10 in 1 million. The risk assessment, which uses the maximum detected concentration as the exposure level, is designed to overestimate the potential risk so that an actual risk, if any is present, would be less than the calculated risk.

Non-cancer adverse health risks are measured against a hazard index, which is the ratio of the predicted exposure concentration to an established threshold level that could cause adverse health effects. The Hazard Index of each non-carcinogenic substance is added to the calculated Hazard Indices of the other non-carcinogens to produce an overall Hazard Index. A significant impact would occur if the total Hazard Index exceeds 1.0.

Risk Characterization Results

The maximum risks from exposure to carcinogens by various exposure pathways are summarized in **Table 4.F-2**. As shown in **Table 4.F-2**, the maximum probability of contracting cancer at future residences as a result of the project, assuming 30-year exposure at any of the lots, is 0.4 in 1 million ($4x10^{-7}$), which is less than the significance threshold of 10 in one million.

Table 4.F-2 also shows that the maximum Hazard Index is 0.6, which is less than the significance threshold of 1.0. Therefore the public health impacts would be less than significant for all chemicals. **Table 4.F-2** also gives a breakdown of the pathways affecting health risks and the principal exposure pathway is inhalation of indoor air.

Uncertainty of Risks

Uncertainties in assessing health risks are dependent on several factors including: uncertainty in measurement data upon which exposure estimates are based; uncertainties in the exposure pathways and prediction of human activities that lead to contact exposure to chemicals and the models used to calculate exposure levels; and uncertainties in the toxicity of specific chemicals and the toxicity of combinations of chemicals.

Uncertainties in the measurement of chemicals were minimized by using the most appropriate analytical methods to assure that quantities were accurately measured and a large number of samples were taken to ensure that potential high readings would not be missed. To compensate for uncertainties in the exposure assessment, the exposure concentration for each pathway was based on the maximum concentration of each chemical, regardless of where the chemical was detected. The standard approach is to use a weighted average of all the concentrations measured in the exposure unit. In the toxicity assessment, there is uncertainty because of extrapolations from animal experiments to human health effects. However, the mathematical models used in the extrapolations are designed to be protective of human health. Therefore, for every condition where there is uncertainty, the health risk assessment used the most conservative assumptions to ensure that the risks were over-estimated.

TABLE 4.F-2
SUMMARY OF CANCER RISKS AND HAZARD INDICES

	Cancer Risk			Hazard Index		
Chemical	**Soil**	**Outdoor Air**	**Indoor Air**	**Soil**	**Outdoor Air**	**Indoor Air**
Chemicals Identified in Soil Vapor Samples						
Benzene	---	---	4E-07	---	---	0.002
Toluene	---	---	na	---	---	0.003
Ethylbenzene	---	---	na	---	---	0.007
m-, p-Xylene	---	---	na	---	---	0.4
o-Xylene	---	---	na	---	---	0.1
Chemicals Identified in Soil Samples						
Benzene	9E-10	2E-09	---	0.00002	0.000008	---
Toluene	na	na	---	0.0000003	0.0000003	---
Ethylbenzene	na	na	---	0.0000006	0.0000002	---
Xylenes	na	na	---	0.0000003	0.000001	---
TPH (C6-C10)	na	na	---	0.003	0.006	---
TPH (C10-C22)	na	na	---	0.08	0.06	---
TPH (C22-C36)	na	na	---	0.01	0.00001	
TOTAL	**9E-10**	**2E-09**	**4E-07**	**0.09**	**0.06**	**0.5**
Total Cancer Risk	**4E-07**					
Total Hazard	**0.6**					

--- = media not used to evaluate the indicated pathway soil data was used to evaluate ingestion of soil, dermal contact with soil and inhalation of volatiles and particulates in outdoor air soil vapor data was used to evaluate inhalation of volatiles in indoor air
na = chemical is not a carcinogen, cancer risks were not calculated

SOURCE: Brown and Caldwell, 2004

Mitigation: None required. Los Angeles City Building Code requires additional mitigation for methane and other gases be implemented when construction occurs at these sites. These additional measures include the installation of membrane barriers and vent piping as well as trench dams and electrical seal offs for each of these properties. Since these measures are already required by regulation, they are not mitigation measures according to CEQA, and the public health impacts at these clusters would be less than significant.

Impact F.2: Future development and related construction activities could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (Less than significant)

All of the PDR lots are located less than 0.25 miles away from at least one of the three local schools:

- Westchester High School
- Paseo del Rey Elementary School
- St. Bernard High School

Cluster 12, located in the MDR area, is not located within 0.25 miles of any school. The health risk assessment described in Impact F.1 evaluated health impacts at locations on the property sites and found no significant impacts. For the schools that are farther away than the residences, the impacts would be even lower. Therefore the impacts to the schools would be less than significant.

Mitigation: None required.

CUMULATIVE IMPACTS

Impact F.3: Public exposure to toxic chemicals from the future development of the 36 lots proposed for sale and other projects or cumulative development could result in an increase in health risks in the project area. Under that condition, the proposed sale's increases in health risks, in combination with other cumulative projects, would be less than significant. (Less than significant)

The relevant cumulative projects identified in Section 3.6 of this EIR, in combination with the future development of the proposed sale were evaluated to determine the project's public health impacts. The cumulative projects include residential and commercial development[22]; none of which are expected to be significant sources of toxic chemicals. Therefore, these cumulative projects would not contribute to issues related to public health. However, one or more of the cumulative projects described in Section 3.6 of this EIR could be located on land that may have the potential to release toxic gases when the projects are built. Because local regulations have strict requirements that are designed to limit emissions from the soil, exposure levels from cumulative projects would be minimal, and such cumulative impacts would be less than significant.

Mitigation: None required.

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[2] These projects include, the Village at Playa Vista, Mountain Gate, Paradise Landmark Condominium Project, Brentwood Project, and Westside Medical Park. See Section 3.6 for more information about these cumulative projects.

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