Section 3.2
Air Quality

The proposed project lies within both the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), and the Sacramento Valley Air Basin (SVAB), under the jurisdiction of the Yolo-Solano Air Quality Management District (Y-SAQMD). This air quality evaluation includes a description of the environmental and regulatory settings and a discussion of the proposed project's construction- and operations-related air quality impacts.

Environmental Setting

Ambient air quality is affected by climatological conditions, topography, and the type and amount of pollutants emitted. The project area is affected by various topographic and climatic factors that result in high potential for regional and local pollutant accumulation. The following discussion describes relevant characteristics of the air basins and provides an overview of conditions that affect ambient air pollutant concentrations in Solano County.

Climate and Topography

The climate in the project area is characterized by the transition between the San Francisco Bay Area and the Sacramento Valley. This area is characterized by cool air flowing from the Pacific Ocean and San Francisco Bay through the Carquinez Strait, where it mixes with warm air in the Sacramento Valley. This difference in temperature and atmospheric surface pressure circulation results in strong winds, dry summers, and rainy winters. From November to March, average temperatures recorded at Rio Vista range from lows of 37 to 44°F to highs of 53 to 65°F. From April to October, average temperatures range from lows of 47 to 58°F to highs of 71 to 91°F. When temperatures are highest, precipitation is lowest—averaging 0.3 inch in July and August. In winter, average precipitation ranges from 1.7 inches in November to 2.72 inches in January.

Air Pollutants and Ambient Air Quality Standards

The primary pollutants of concern in the project area are PM10 and ozone. The SVAB portion of the project area (southwest of Highways 12 and 113) is in part of a sub region within the Sacramento Valley that consists of all or portions of Sacramento, Yolo, Solano, El Dorado, Placer, and Sutter Counties. This sub region is designated as a "serious" nonattainment area for the national 8-hour ozone standard. Within the SFBAAB, Solano County is in attainment for all federal and state criteria pollutants, except ozone and PM10. Table 3.2-1 presents ambient air quality standards applicable in California.

There are no air quality monitoring stations in the project area. Representative monitoring stations are the Fairfield-Gregory Street and Fairfield-Chadbourne Road monitoring stations west of the project area within the SFAAB and the Vacaville-Merchant Street and Vacaville-Elmira Road monitoring stations north of the project area within the SVAB. Except for ozone and PM10, the project area is in attainment or is unclassified for all other federal and state criteria pollutants (Table 3.2-2).

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials; it causes extensive damage to plants, such as leaf discoloration and cell damage.

State standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million, not to be exceeded. The U.S. Environmental Protection Agency (EPA) recently replaced the 1-hour ozone standard with an 8-hour standard of 0.08 parts per million, while the California Air Resources board recently enacted a state 8-hour standard of 0.07 parts per million.

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere.

Ozone precursors, including reactive organic gases (ROG) and nitrogen oxides (NOx), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors ROG and NOx are emitted by mobile sources and stationary combustion equipment.

Table 3.2-1. Ambient Air Quality Standards Applicable in California

			Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
Pollutant	Symbol	Average Time	California	National	California	National	California	National
Ozone	O_3	8 hours[a]	0.07	0.08	N/A	160	N/A	If 3-year average of annual third-highest daily 8-hour maximum exceeds standard
		1 hour	0.09	N/A	180	N/A	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
Nitrogen dioxide	NO_2	Annual average	N/A	0.053	N/A	100	N/A	If exceeded
		1 hour	0.25	N/A	470	N/A	If exceeded	N/A
Sulfur dioxide	SO_2	Annual average	N/A	0.03	N/A	80	N/A	If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	N/A	655	N/A	N/A	N/A
Inhalable particulate matter	PM10	Annual geometric mean	N/A	N/A	20	N/A	If exceeded	N/A
		Annual arithmetic mean	N/A	N/A	N/A	50	N/A	If exceeded
		24 hours	N/A	N/A	50	150	N/A	If exceeded on more than 1 day per year
Inhalable particulate matter	PM2.5	Annual arithmetic mean[a]	N/A	N/A	12	15	N/A	If spatial average exceeded on more than 3 days in 3 years
		24 hours[a]	N/A	N/A	N/A	65	N/A	If exceeds 98th percentile of concentrations in a year

Notes:

All standards are based on measurements at 25 ◦C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
N/A = Not applicable.

[a] California 8-hour ozone standard was enacted on April 29, 2005 and will become effective in early 2006.

Table 3.2-2. State and National Air Attainment Status Summary

Air Pollutant	Attainment Status – SFBAAB	Attainment Status – SVAB
Ozone (O_3)	Moderate nonattainment for national ambient air quality standards (NAAQS) 8-hour, serious nonattainment for California ambient air quality standards (CAAQS)	Serious nonattainment for NAAQS 8-hour, serious nonattainment for CAAQS
Carbon monoxide (CO)	Attainment for state and federal standards	Attainment for state and federal standards
Nitrogen dioxide (NO_2)	Attainment	Attainment
Sulfur dioxide (SO_2)	Attainment	Attainment
Suspended particulate matter (PM10)	Attainment for NAAQS, nonattainment for CAAQS	Moderate nonattainment for NAAQS, nonattainment for CAAQS
Particulate matter (PM2.5)	Attainment for NAAQS, nonattainment for CAAQS	Nonattainment for NAAQS, nonattainment for CAAQS
Sulfates	Unclassified	Unclassified
Lead	Attainment	Attainment
Hydrogen sulfide	Unclassified	Unclassified

Notes:

SVAB = Sacramento Valley Air Basin.
SFBAAB = San Francisco Bay Area Air Basin.

Carbon Monoxide

Carbon monoxide (CO) is essentially inert to plants and materials but can significantly affect human health. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches and nausea to death.

State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 parts per million and the federal 1-hour standard is 35 parts per million. Both state and federal standards for the 8-hour averaging period are 9 parts per million.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when light winds combine with the formation of ground-level temperature inversions (typically from evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Nitrogen Oxides

NOx contribute to smog and can injure plants and animals and affect human health. NOx also contribute to acidic deposition and react with ROG in the presence of sunlight to form photochemical smog. NOx concentrations result in a brownish color because they absorb into the blue-green area of the visible spectrum, greatly affecting visibility.

The state NOx standard is 0.25 parts per million on a 1-hour average. The federal NOx standard is 0.053 parts per million on an annual average.

NOx is emitted primarily by combustion sources, including both mobile and stationary sources. NOx also is emitted by a variety of area sources, ranging from wildfires and prescribed fires to water-heating and space-heating systems powered by fossil fuels.

PM10

Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulate matter can damage human health and retard plant growth, as well as reduce visibility, soil buildings and other structures, and corrode materials.

The state PM10 standards are 50 micrograms per cubic meter as a 24-hour average and 30 micrograms per cubic meter as an annual geometric mean. The federal PM10 standards are 150 micrograms per cubic meter as a 24-hour average and 50 micrograms per cubic meter as an annual arithmetic mean.

PM10 emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

Sulfur Dioxide

The major health concerns associated with exposure to high concentrations of SO_2 include effects on breathing, respiratory illness, alterations in pulmonary defenses, and aggravation of existing cardiovascular disease. Children; the elderly; and people with asthma, cardiovascular disease, or chronic lung diseases—such as bronchitis or emphysema—are most susceptible to adverse health effects associated with exposure to SO_2. SO_2 is a precursor to sulfates, which are associated with acidification of lakes and streams, accelerated corrosion of buildings and monuments, reduced visibility, and other adverse health effects.

The EPA's health-based national air quality standard for SO_2 is 0.03 parts per million measured as an annual arithmetic mean concentration, 0.14 parts per

million measured over a 24-hour period, and 0.5 parts per million measured over a 3-hour average period. California's SO_2 standard is 0.04 parts per million measured over a 24-hour average period. There are no sulfur dioxide monitoring stations in the project area.

Sulfur dioxide belongs to the family of gases called sulfur oxides (SOx). These gases are formed when fuel containing sulfur (mainly coal and oil) is burned and also during metal smelting and other industrial processes.

Regulatory Setting

The project is located within the boundaries of the BAAQMD and Y-SAQMD. These local regulatory authorities administer air quality regulations developed at the federal, state, and local levels. The federal, state, and local air quality regulations applicable to the proposed project are described below.

Federal Regulations

Federal air quality laws regulate air pollutants, primarily through industry-specific standards and planning requirements. The primary legislation that governs federal air quality regulations is the Clean Air Act Amendments of 1990. Industrial pollution sources are required to obtain air quality permits and to adhere to performance standards. In this way, federal air quality laws regulate criteria, toxic, and nuisance air emissions from industrial sources. Criteria pollutants are substances for which the EPA has established national ambient air quality standards. Criteria pollutants include CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), particulate matter (PM2.5 and PM10), and lead. Noncriteria air pollutants, also known as toxic air contaminants, are airborne substances capable of causing adverse health effects as a result of short-term (acute) or long-term (chronic) exposure. Nuisance pollutants are substances that can result in complaints from the population about adverse impacts on quality of life. The nuisance pollutants regulated by the air districts are odors and visible plumes (smoke). Generally, federal permitting requirements for industrial sources are enforced locally by the air districts.

The federal Clean Air Act Amendments of 1990 provide for air toxics to be regulated at the federal level. Before the Clean Air Act Amendments of 1990 were enacted, air toxics were controlled at the federal level using the source-specific New Source Performance Standards.

State Regulations

The California Air Resources Board, which is part of the California Environmental Protection Agency, develops air quality regulations at the state

level. The state regulations mirror federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988.

State requirements specifically address air toxics issues through Assembly Bill 1807 (known as the Tanner Bill), which established the state air toxics program, and Assembly Bill 2588, the Air Toxics Hot Spots Information and Assessment Act. The air quality regulations developed from these bills have been modified recently to incorporate the federal regulations associated with the federal Clean Air Act Amendments of 1990.

Air Toxics

The Air Toxics Hot Spots Information and Assessment Act (Assembly Bill 2588, 1987, Connelly) (Hot Spots Act) was enacted in September 1987. Under this bill, stationary sources of emissions are required to report the types and quantities of certain substances that their facilities routinely release into the air. Emissions of interest are those that result from the routine operation of a facility or that are predictable, including but not limited to, continuous and intermittent releases and process upsets or leaks.

The goals of the Hot Spots Act are to collect emissions data, identify facilities with localized impacts, ascertain health risks, and notify nearby residents of significant risks. In September 1992, the Hot Spots Act was amended by Senate Bill 1731 (Calderon) to address the reduction of significant risks. The bill requires that owners of significant-risk facilities reduce their risks below the level of significance. Owners of facilities found to pose significant risks by an air district must prepare and implement risk reduction audits and plans within 6 months of the determination.

The Hot Spots Act requires the air resources board to compile and maintain a list of substances posing chronic or acute health threats when present in the air. The Hot Spots Act currently identifies by reference more than 600 substances that are required to be subject to the program. The air resources board may remove substances from the list if criteria outlined in the law are met. A facility is subject to the act if it (1) manufactures, formulates, uses, or releases a substance subject to the act (or a substance that reacts to form such a substance) and emits 10 tons or more per year of total organic gases, particulate matter, nitrogen oxides, or sulfur oxides; (2) is listed in any air district's existing toxics use or toxics air emission survey, inventory, or report released or compiled by an air district; or (3) manufactures, formulates, uses, or releases a substance subject to the act (or a substance that reacts to form such a substance), emits less than 10 tons per year of criteria pollutants, and is subject to emission inventory requirements.

The Hot Spots Act specifies that each local air district must prioritize the facilities under its jurisdiction. Those designated by an air district as "high

priority" are required to submit a health risk assessment within 150 days. In addition, an air district may require any facility to prepare and submit a risk assessment according to district priorities established for purposes of the Hot Spots Act.

Local Regulations

At the local level, air quality is managed through land use and development planning practices. These practices are implemented in Solano County through its general planning processes. The BAAQMD and Y-SAQMD are responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

The project is located within nonattainment areas for federal ozone and PM10 standards. To attain national ambient air quality standards and California ambient air quality standards, the Y-SAQMD has adopted the Sacramento Area Regional Ozone Attainment Plan for the national and state 1-hour ozone standards, and the BAAQMD has developed the Bay Area 2001 Ozone Attainment Plan for the national 1-hour ozone standard and the Bay Area 2000 Clean Air Plan for attaining the state 1-hour ozone standard every 3 years. Because the SFBAAB has been in attainment of CO standards for more than 10 years, CO is no longer a primary pollutant of concern. The BAAQMD has also been developing a Bay Area Ozone Strategy to be used to update its ozone attainment and clean air plans (http://www.baaqmd.gov/pln/plans/index.htm).

Federal clean air planning requirements specify that states must develop and adopt State Implementation Plans (air quality plans) showing how they will achieve or maintain air quality standards. In California, the California Air Resources Board has delegated authority to prepare these plans to individual air districts. The State Implementation Plan specifies that regional air quality standards for ozone concentrations can be met through additional source controls and through trip reduction strategies.

Impact Analysis

Significance Criteria

The evaluation of project impacts is divided into temporary (construction-related) impacts and permanent (operational) impacts. Criteria for determining the significance of air quality impacts were developed based on questions contained in the environmental checklist form in Appendix G of the State CEQA Guidelines and on guidance from the BAAQMD and Y-SAQMD. A project may have a significant effect on the environment if it would:

- Conflict with or obstruct implementation of any applicable federal, state, or local air quality plan, including the Y-SAQMD significance thresholds for net increases of:
  - ROG above 82 pounds per day,
  - NOx above 82 pounds per day,
  - PM10 above 150 pounds per day, or
  - CO above 550 pounds per day;
- Exceed the BAAQMD's significance thresholds of 80 lbs per day (and/or 15 tons per year) of ROG, NOx, or PM10 from project operations;
- Exceed the BAAQMD's significance thresholds for toxic air contaminants (TACs), which include increasing the probability of contracting cancer for the maximally exposed individual (MEI) by 10 in one million or more; and/or causing an increase in acute or chronic health risk that exceed the hazard index of one;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation, including normal operational and accidental releases;
- Expose sensitive receptors to substantial pollutant concentrations;
- Result in substantial air emissions or deterioration of air quality;
- Create objectionable odors affecting a substantial number of people; or
- Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is a nonattainment area with regard to an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).

Methodology and Assumptions

Construction and future operations activities associated with the proposed project could result in temporary or permanent impacts on air quality. In assessing the magnitude of possible effects on air quality, the following assumptions were made.

- During construction, Lodi Gas Storage will implement the best management practices (BMPs) that are consistent with BAAQMD guidelines for reducing construction impacts to a less than significant level. These are described in Chapter 2, "Project Description," and have been incorporated into the project.
- Lodi Gas Storage will install best available control technology (BACT) to reduce emissions from the four natural gas compressor units.

Construction Emissions

The BAAQMD has not established thresholds for construction emissions. Instead of estimating construction emissions for a project, the BAAQMD requires that all feasible mitigation measures be incorporated into the project to minimize emissions. The Y-SAQMD, however, has developed emission thresholds for construction emissions. Consequently, construction emission estimates have been developed for that portion of the project within the jurisdiction of the Y-SAQMD. Those emission estimates are summarized in Table 3.2-3.

Table 3.2-3. Estimates of Construction Emissions within the Yolo-Solano Air Quality Management District (pounds per day)

Activity	ROG	NOx	CO	PM10
Metering station – land clearing and excavation (unmitigated)	8.2	59.2	64.2	12.6
Metering station – road, building, and utilities (unmitigated)	4.0	24.4	34.2	0.9
Pipeline construction – 7,500 feet (unmitigated)	10.4	73.2	83.3	43.1
Maximum daily emissions (unmitigated)	10.4	73.2	83.3	43.1
Significance thresholds	82	82	550	150
Unmitigated emissions exceed thresholds?	No	No	No	No

Notes:

Pipeline construction assumes that grading, trenching, laying pipe, welding, and backfilling will occur simultaneously. Maximum daily emissions assume that pipeline construction would not occur at the same time as either metering station – land clearing and excavation or metering station – road, building, and utilities construction. Emissions were estimated using the URBEMIS2002 (version 8.7) construction module. The URBEMIS2002 model results are shown in Appendix C.

Operations Emissions

Operations emissions were estimated using BACT guidelines provided by the BAAQMD. Those emission estimates are based on controlled emission levels. Table 3.2-4 summarizes controlled operations emissions associated with the project. Because these emissions would occur almost entirely within the SFBAAB, they were compared to the BAAQMD's significance thresholds for operations emissions.

Table 3.2-4. Operations Emission Estimates for the Kirby Hills Natural Gas Project

	Total Emissions				
Activity	CO	ROG	NOx	SOx	PM10
Glycol dehydration system (tons/year)	0.5	0.1	0.1	0.01	0.02
Compressor station (tons/year)	25.0	6.3	6.3	0.02	Neg.
Totals (tons/year)	25.5	6.4	6.4	0.03	0.02
Bay Area Air Quality Management District (BAAQMD) threshold (tons/year)	N/A	15	15	N/A	15
Exceed threshold?	No	No	No	No	No
Glycol dehydration system (lbs/day)	4.9	0.9	1.2	0.1	0.2
Compressor station (lbs/day)	228.4	57.1	57.1	0.2	0.03
Totals (lbs/day)	233.3	58.0	58.3	0.3	0.2
BAAQMD threshold (lbs/day)	N/A	80	80	N/A	80
Exceed threshold?	No	No	No	No	No

_____

Notes:

Compressor station emissions assume a Cat 3606 lean-burn engine. Glycol dehydration system and compressor station emissions assume a 60 percent load factor to estimate annual emissions. Maximum daily emissions assume operation 24 hours per day. N/A means that the BAAQMD has not established significance thresholds for these criteria pollutants. Compressor station emissions for ROG, NOx, and CO are based on BAAQMD best available control technology guidance while emissions of SOx and PM10 are based on uncontrolled emission factors developed by the U.S. Environmental Protection Agency. (BAAQMD 2003, EPA 2000). Glycol dehydration system emissions based on applicant correspondence (Fullerton pers. comm.).

Impacts

IMPACT 3.2-1: CONSTRUCTION-RELATED EMISSIONS IN BAAQMD

BAAQMD does not require quantification of construction emissions. Instead, it requires implementation of effective and comprehensive feasible control measures to reduce PM10 emissions (BAAQMD 1999). PM10 emitted during construction activities varies greatly, depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and weather conditions. Despite this variability in emissions, experience has shown that a number of feasible control measures can be reasonably implemented to reduce PM10 emissions during construction. Lodi Gas Storage has committed to implementing the BAAQMD's PM10 best available control measures as part of the project (see Chapter 2, "Project Description"). According to the District, construction emissions are considered significant unless all applicable control measures are implemented. Because Lodi Gas Storage has committed to

implementing all applicable BAAQMD control measures, this impact is considered less than significant, and no mitigation is required.

Construction equipment also emits PM10, CO, and ozone precursors as exhaust emissions. Construction-related emissions of these pollutants were not estimated because they are already included in the emission inventory that forms the basis for the BAAQMD's regional air quality plans and because those emissions are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (BAAQMD 1999). A portion of the construction emissions includes those from a temporary compressor that will be a natural gas-fired reciprocating engine driven by a compressor of 1,000 horsepower or less. This temporary compressor will be used to inject natural gas into the storage reservoir; after the permanent facility is put into operation, this temporary compressor will be removed. Because installation and operation of the temporary compressor are considered part of project construction, and because the compressor will be installed in the BAAQMD portion of the project, emissions have not been estimated for this equipment. Although it is temporary, this compressor nevertheless is subject to the BAAQMD's permitting requirements with applicable control measures. Therefore, the exhaust emissions from project construction, including those from the temporary compressor, are considered less than significant. No mitigation is required.

IMPACT 3.2-2: CONSTRUCTION-RELATED EMISSIONS IN Y-SAQMD

Construction-related emissions in the Y-SAQMD portion of Solano County are considered less than significant because they are less than the significance thresholds of 82 pounds NOx and ROG per day, 550 pounds CO per day, and 150 pounds PM10 per day (Table 3.2-3). No mitigation is required.

IMPACT 3.2-3: POTENTIAL EXCEEDANCE OF BAAQMD OPERATIONAL EMISSION THRESHOLDS FOR NOX, ROG, AND PM10

Controlled operations emissions of NOx, ROG, and PM10 are summarized in Table 3.2-4. Those emissions reflect Lodi Gas Storage's proposed BACT for the project that involve an oxidation catalyst, which would limit emissions to 0.15 gram ROG and 0.60 gram CO per brake-horsepower hour and selective catalytic reduction to limit NOx emissions to 0.15 gram per brake-horsepower hour. Before obtaining an Authority to Construct Permit and a Permit to Operate, Lodi Gas Storage must obtain the agreement of the BAAQMD as to what technologies constitute BACT. If controlled emissions (after installation of BACT) exceed specific trigger levels, then emission offsets or credits must be obtained for the project.

As described in Chapter 2, Lodi Gas Storage will provide the CPUC with evidence that it has complied with the requirements of the BAAQMD. This evidence shall be in the form of a final permit from the BAAQMD. The final

permit will be provided to the CPUC prior to the beginning of construction of the compression facility.

The emissions from the Lodi Gas Storage's stationary sources, with implementation of BACT, would be less than the BAAQMD's operational emission thresholds. Therefore, this impact is considered less than significant, and no mitigation is required.

IMPACT 3.2-4: EMISSION OF TOXIC AIR POLLUTANTS FROM NATURAL GAS-FIRED EQUIPMENT

Estimated toxic air pollutant emissions from the natural gas combustion turbines and the glycol reboilers have the potential to cause health impacts based on the BAAQMD's thresholds of significance for toxic air compounds (see "Significance Criteria"). Consequently, a screening-level health risk assessment was conducted to assess the project's health risk potential. A spreadsheet is included in Appendix C, showing the calculations used to evaluate project health risks.

The screening-level health risk assessment conducted for this analysis is based on the methodology recommended by the Office of Environmental Health Hazard Assessment (2003). The SCREEN3 model, an extremely conservative air dispersion model, was used for this analysis. SCREEN3 assumes worst-case meteorological conditions and is used to calculate the worst-case 1-hour concentrations. The data used to conduct the SCREEN3 analysis are listed in the footnotes to Table 3.2-5. The maximum 1-hour concentrations produced by SCREEN3 were converted to annual concentrations by multiplying by 0.10, as recommended by the BAAQMD's Permit Modeling Guidance (BAAQMD 2005).

The results of the SCREEN3 health risk assessment are shown in Table 3.2-5. Appendix C contains additional details on the calculation of health risks. The highest estimated cancer risk would result from exposure to formaldehyde emissions and equals a cancer risk of 0.3 per million, which is less than the BAAQMD's threshold of 10 per million. The cancer risk from benzene (0.1 per million) is less than that from formaldehyde inhalation. The combined cancer risk from inhalation exposure to formaldehyde and benzene is also less than the BAAQMD's threshold of 10 in 1 million. This estimate of cancer risk represents a worse case estimate, using an extremely conservative SCREEN3 model and assumes co-location of all point sources as required by the SCREEN3 model. The estimates of cancer risk are based on the maximum predicted downwind concentration. Actual risks are expected to be much lower due to the lack of sensitive receptors in the vicinity of the emission sources. However, even this conservative analysis shows that cancer risk would not result in a significant air quality impact.

Table 3.2-5. Screening Health Risk Assessment Modeling Results

	Formaldehyde	Benzene	Toluene	Ethylbenzene	Xylene
Cancer Risk (Significant if > 10 per million)	0.3 per million	0.1 per million	Not Applicable	Not Applicable	Not Applicable
Chronic HHI (Significant if > 1)	0.016	6.3E-5	4.4E-6	3.0E-8	6.6E-7
Acute HHI (Significant if > 1)	0.005	2.9E-5	3.6E-7	Not Applicable	2.1E-7

Notes:

The SCREEN3 model was used to estimate emissions. Modeling was conducted for the four compressor engines assuming co-location, a stack height of 0.76 meter, a stack exit velocity of 66.6 meters per second, a stack exit temperature of 721 degrees Kelvin, ambient air temperature of 293 degrees Kelvin, a receptor height of 2.0 meters, and using the rural option. Modeling was conducted for the glycol regenerators assuming co-location, a stack height of 9.8 meters, a stack exit velocity of 10 meters per second, a stack exit temperature of 810 degrees Kelvin, ambient air temperature of 293.0 degrees Kelvin, and using the rural option. Cancer risk was calculated by multiplying the cancer unit risk factor by the maximum annual concentration. A cancer risk of less than 10 in 1 million is considered less than significant.

The chronic health hazard index (HHI) was calculated by dividing the maximum annual concentration by the chronic reference exposure level. The acute health hazard index was calculated by dividing the maximum hourly concentration by the acute reference exposure level. Chronic and acute HHIs are considered less than significant if less than 1.

Source: Office of Environmental Health Hazard Assessment 2003.

Similarly, the chronic and acute health hazards indices shown in Table 3.2-5 indicate that the project would not pose a health risk to the maximally exposed individual because those indices, both individually and combined, are less than 1. The worst-case non-cancer health risks are also less than significance thresholds established by the BAAQMD; consequently, the project does not pose a significant non-cancer health risk. Although the BAAQMD likely will conduct its own health risk assessment for this project, this conservative screening analysis indicates that the District's modeling results would confirm that the project does not pose a significant health risk to residents living in the project vicinity. This impact is considered less than significant, and no mitigation is required.

IMPACT 3.2-5: POTENTIAL FOR OBJECTIONABLE ODORS

Processing of natural gas at the compressor facility and at the injection/ withdrawal wells has the potential to result in release of small quantities of odorized natural gas. Odorized gas could be emitted from piping components such as valves and flanges (fugitive emissions). Such leaks are unlikely, would be small, and would quickly be dissipated by even light winds. Nevertheless, Lodi Gas Storage has committed to measures to prevent and repair such leaks.

As described in Chapter 2 under "Air Quality Protection Measures," aboveground piping components will be maintained to minimize leakage of

odorized gas. Piping connections will be welded to the extent practicable given design considerations. Valves, flanges, and other piping components will be monitored for leaks by operations personnel as part of facility operations. Lodi Gas Storage has committed to quarterly reporting to the CPUC of any third-party notifications regarding gas odors. Because these measures have been incorporated into the project description, this potential impact is considered less than significant and no mitigation is required.

Mitigation Measures

Lodi Gas Storage will implement BMPs (described in Chapter 2, "Project Description") as part of the proposed project to avoid and minimize potentially significant impacts on air quality. Therefore, no mitigation is required for potential impacts related to air quality.