4.13 AIR QUALITY

SETTING

The project site is located at the northwestern corner of the San Joaquin Valley Air Basin. This air basin has a high potential for air pollution due to the geography and climate. The basin is located generally downwind of and receives pollutants from the adjacent San Francisco Bay Air Basin.

The San Joaquin Valley Air Basin is a nonattainment area (has not attained the State or Federal ambient air quality standards) for PM-10 (particulate matter less than 10 microns in diameter) and ozone. This has resulted in a requirement to prepare regional plans to meet both the Federal and State standards. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has recently adopted Federal nonattainment plans for PM-10 and carbon monoxide; the Federal nonattainment plan for ozone is due in November 1994 (SJVUAPCD, 1991, 1992a) The State-required nonattainment plan for ozone and carbon monoxide, the *1991 Air Quality Attainment Plan* for the air basin, has been approved by the State Air Resources Board (SJVUAPCD, 1992b).

The *1991 Air Quality Attainment Plan* for the San Joaquin Valley Air Basin identifies eleven Transportation Control Measures (TCMs) as "reasonably available" in the San Joaquin Valley Air Basin. The following TCMs are included in the Plan:

Traffic flow improvements
Public transit
Passenger rail support/facilities
Rideshare program
Suburban park and ride lots
Bicycling program
Trip reduction programs
Telecommunications
Alternative work schedules

The Plan also proposes an indirect source program consisting of three elements:

- Enhanced District CEQA Participation
- Air Quality Element for General Plans
- New and Modified Indirect Source Review

The SJVUAPCD is implementing the first of these indirect source programs, and has produced a model Air Quality Element for General Plans. No schedule has been developed for adoption of a New and Modified Indirect Source Review Rule.

IMPACTS AND MITIGATION MEASURES

According to CEQA, a project will normally have a significant adverse impact on air quality if it will "violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations."

The project's potential for violating the ambient air quality standards for carbon monoxide is used in this DEIR to determine the significance of localized air quality impacts. The potential to create objectionable odors is also a significance threshold for localized air quality impacts.

For regional pollutants, violation of air quality standards cannot be used as a "threshold of significance" since the standards are exceeded in San Joaquin County, the entire San Joaquin Valley Air Basin, and the adjacent San Francisco Bay Air Basin. Impacts are judged on their contribution to the regional emission burden, using the following thresholds of significance suggested by the San Joaquin Unit of the San Joaquin Valley Unified Air Pollution Control District: emissions of ozone precursors (hydrocarbons or oxides of nitrogen) exceeding 150 pounds per day and emissions of PM-10 exceeding 80 pounds per day.

MASTER PLAN

The Draft Master Plan proposes the implementation of numerous strategies to reduce the air quality impacts of proposed development. Because of the interrelationship among air quality, transportation, land use, and community design, many of the air quality objectives, policies, and implementations appear throughout the Draft Master Plan. The Draft Master Plan strategies for air quality provide a comprehensive framework for reducing the impact of future developments and uses all control strategies generally considered feasible for large-scale land use developments in California.

The Draft Master Plan air quality mitigation measures would be implemented over several time scales. The bulk of the measures related to land use, circulation, and infrastructure would be implemented at specific plan stages. Those measures related to development and design standards would be implemented at the Tentative Map stage. The most crucial air quality mitigation measure is the ~~implementation~~ **development** of **the** Transportation Demand Management **Plan**, which is to occur prior to submittal of the first Development Permit. Other strategies are to be implemented at an unspecified future date when future facilities are built or certain development thresholds are exceeded. The overall time frame for implementation of the Draft Master Plan air quality program appears to be logical and appropriate.

Impact M4.13-1

The project would increase regional emissions of criteria pollutants through new vehicle travel and area-source emissions associated with residential and industrial uses in excess of threshold levels established by the San Joaquin Valley Unified Air Pollution Control District. These emissions would add to the regional emission burdens within th San Joaquin Valley Air Basin

and the adjacent San Francisco Bay Air Basin, and delay eventual attainment of air quality standards for ozone and suspended particulate matter (PM-10).

Vehicle trips to, from, and within the project would result in air pollutant emissions over a large area. To estimate the emissions associated with the project, the URBEMIS-3 computer program, developed by the California Air Resources Board, was applied to project land uses. Travel data on numbers of trips and average trip length by trip type were derived from the transportation model used to analyze the traffic impacts of the project as input to the URBEMIS-3 program.

The daily increases in regional emissions from auto travel and residential uses, assuming buildout of Specific Plan I and the Master Plan, are shown in Table 4.13-1 for four regional pollutants.

TABLE 4.13-1

PROJECT EMISSIONS FOR SPECIFIC PLAN 1 AND MASTER PLAN BUILDOUT
(Pounds per Day)

	ROG	NO_X	PM-10	SO_X
Master Plan Buildout Year 2010				
Automobile Emissions	4,302	8,501	823	965
Residential Emissions	1,836	366	127	22
Total	6,138	8,867	950	987
Percent of Countywide	4.0	7.0	0.03	4.1
Specific Plan I Year 2000 (Full Employment)				
Automobile Emissions	1,256	2,362	235	280
Residential Emissions	175	35	12	2
Total	1,431	2,397	247	282
Percent of Countywide	0.9	1.9	0.01	1.2
Specific Plan I Year 2000 (Expected Employment)				
Automobile Emissions	970	1,817	180	215
Residential Emissions	175	35	12	2
Total	1,145	1,852	192	217
Percent of Countywide	0.7	1.5	0.01	0.9

Notes: ROG = Reactive organic gases.
NO_X = Nitrogen oxides.
PM-10 = Particulate matter, ten microns.
SO_X = Sulfur oxides.
Refer to the Transportation section for discussion of Full Employment and Expected Employment scenarios for Specific Plan I.

Residential uses contain a number of dispersed and intermittent sources of pollutants such as space and water heaters, household paints and solvents, fireplaces and wood stoves, lawn mowers, and other equipment. Annual emission rates for residential uses were taken from published sources (BAAQMD, 1985).

The industrial portions of the project could include industrial sources of air pollutants. The type or amount of such emissions is not predictable because it would depend on the individual uses, which are currently unknown, that might locate within the project. Any future industrial sources that would locate within the project would be subject to the rules and regulations of the San Joaquin Valley Unified Air Pollution Control District. Under the provisions of the California Clean Air Act, any

future industrial sources will be subject to the "no net increase" strategy included in the *1991 Air Quality Attainment Plan* (SJVUAPCD, 1992b).

The proposed project would result in substantial new regional emissions (Table 4.13-1). These new emissions would cause a deterioration in regional air quality and delay eventual attainment of the air quality standards for ozone and PM-10 in San Joaquin County and the larger San Joaquin Valley Air Basin.

The majority of emissions shown in Table 4.13-1 would occur within the San Joaquin Valley Air Basin. However, a substantial portion would occur in the neighboring San Francisco Bay Air Basin. A substantial portion of the vehicle trips to and from the project would pass through or have destinations in the neighboring Livermore Valley. Approximately 32 percent of the Vehicle Miles Traveled generated by the project at buildout would occur within the Livermore Valley; a similar fraction of the emissions shown in Table 4.13-1 would be generated within the Livermore Valley.

The FSEIR identified several mitigation measures designed to reduce regional air quality impacts. These included land use strategies to reduce travel, incentives for non-auto travel, strategies to reduce vehicle trip production at employment sites, and measures to reduce area-source emissions from residences. Such measures have been substantially incorporated into the Draft Master Plan Objectives, Policies, and Implementations; additionally, the following measures are recommended. Inclusion of these measures, however, would not reduce the air quality impacts of the project in the Livermore and San Joaquin valleys to a level of insignificance; irrespective of the mitigation measures, the impact would be unavoidable and adverse.

Mitigation Measure M4.13-1

(a) The County should incorporate a Countywide requirement for an air quality mitigation fee as part of the Development Title. Such a fee could be imposed when new projects generating more than 200 trips per day are not able to reduce trip generation by at least 25 percent. This fee could be used for air quality mitigation improvements, such as park and ride facilities, transit, vehicle inspection, or old car buy-back programs.

(b) Industrial or commercial operations at the project site with equipment that causes or has a potential for air pollution, or that controls such air pollution, may need to apply for an Authority to Construct and Permit to Operate, according to regulations of the San Joaquin Valley Unified Air Pollution Control District.

(c) The implementation under Objective 1 of Houses and Buildings, Air Quality and Transportation Demand Management (Appendix C) should be revised as follows:

"The following items shall be required as conditions of approval of tentative subdivision maps for residential development:

"a) Gas Outlets. Natural gas line outlets shall be provided to backyards to encourage usage of natural gas or electric barbecues.

"b) Electrical Outlets. 220-volt electrical outlets for recharging electric automobiles shall be provided in each garage. Electrical outlets shall be located on the outside of single family homes to accommodate electric lawn maintenance equipment and electric barbecues.

"c) Water Heaters. Low nitrogen oxide (NOx) emitting and/or high efficiency water heaters shall be required for all dwelling units.

"d) Fireplaces. Each single family residence shall have no more than one zero clearance fireplace or freestanding wood stove. Only EPA certified fireplaces and wood stoves shall be installed."

Impact M4.13-2

The project would increase the potential for nuisance complaints due to adjacent agricultural activities.

The Draft Master Plan proposes residential development adjacent to the western site boundary next to land that would remain in agricultural use. North of where Marina Boulevard diverges from the County line, residences would be located within 100 feet of the site boundary. Where Marina

Boulevard adjoins the western boundary, residences would be located within 100 feet of the eastern right-of-way line of Marina Boulevard, providing a minimum 210-foot setback from the west edge of the site. Security fences and sound walls proposed along the property boundary would be ineffective in reducing agricultural-related air quality effects. The extreme high winds that normally blow from the west amplify the dust generation of agricultural activities such as tilling, mowing, soil preparation and general travel on unpaved roads and surfaces. Dust and particulate matter would be carried onto the project site where its deposition would soil exposed surfaces and potentially irritate residents with pre-existing lung problems. The severity of these impacts would be greatest at the western border of the site and diminish with distance to the east. Given that the population of the site would be urban rather than rural (and thus less tolerant of agricultural dust and odors), an increase in complaints to the San Joaquin Valley Unified Air Pollution Control District could be expected with site development from residences adjacent to the western site boundary.

Mitigation Measure M4.13-2

Policy a) should be replaced under Objective 10 in Development and Design (West Edge Treatment) (Appendix C) as follows:

"a) Edge treatments along the west edge shall provide a minimum 500-foot setback for residences to mitigate any potential impacts from aerial spraying and other agricultural activities."

The last item under Policy e) under Objective 10, Development and Design (West Edge Treatment) (Appendix C) should be replaced as follows:

"• 100-foot setback from the eastern right of way line of Marina Boulevard to the nearest dwelling (minimum 500 feet to the community boundary)."

The first item under Policy d) of Objective 10, Development and Design (West Edge Treatment) (Appendix C) should be revised as follows:

"• Minimum 500-foot setback from the nearest community boundary to the nearest dwelling."

The first item under Policy e) of Objective 10, Development and Design (Appendix C) should be replaced with:

"• Minimum 500-foot setback from the nearest community boundary to the nearest dwelling."

Impact M4.13-3

The project would increase the potential for odor-related land use conflicts.

The project includes a wastewater treatment plant that would be a potential source of odors under certain operational and meteorological conditions. The location of the wastewater treatment plant is such that no residences within the project are in proximity to the plant.

Along the eastern site boundary, a residence is located about 2,000 feet off-site, east of the proposed wastewater treatment plant. ~~A distance of 2,000 feet appears to be appropriate for minimizing odors reaching that residence. Therefore, t~~ This is a less-than-significant impact.

Mitigation Measure M4.13-3

None required.

Impact M4.13-4

The project would increase carbon monoxide concentrations along streets and intersections providing access to the project site.

Project traffic would add to concentrations of carbon monoxide along streets and near intersections providing access to the project site. Computer modeling of carbon monoxide levels, using the CALINE-4 program developed by the California Department of Transportation, was conducted for locations near the most heavily-congested intersections in the project vicinity and along the I-205 and I-580 freeways under worst-case traffic and meteorological conditions. These locations were selected as having the highest potential for carbon monoxide based on the volume of traffic and congestion conditions, and concentrations at these locations should represent the highest to be expected near the project site. The resulting predicted concentrations are shown in Table 4.13-2.

The CALINE-4 results indicate that project traffic would increase carbon monoxide concentrations by as much as 2.3 parts per million during the 1-hour averaging time and 1.4 parts per million during the 8-hour averaging time. The existing and estimated future concentrations at worst-case locations remain below the State and Federal ambient air quality standards.

The project does not appear to have an adverse impact on carbon monoxide concentrations near roads, intersections, and freeways. The Objectives, Policies, and Implementations pertaining to congestion management in the Draft Master Plan, if implemented in a timely manner, should ensure that local carbon monoxide concentrations do not become a problem in the future. This is a less-than-significant impact.

Mitigation Measure ~~4.14-4~~ M4.13-4

None required.

Impact M4.13-5

Construction activities would generate dust and particulate matter that could exceed the PM-10 threshold of significance.

Construction activities would include clearing, excavation, grading, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth. Construction dust would affect local and regional air quality at various times during the buildout period of the project. The dry, windy

TABLE 4.13-2

WORST CASE CARBON MONOXIDE CONCENTRATIONS
(parts per million)

Location	Averaging Time	Most Stringent Standard	Case 1	Case 2	Case 3	Case 4	Case 5
Byron Highway/	1-Hour	20.0	6.3	6.8	6.9	6.9	7.0
Mt. House Road	8-Hour	9.0	3.8	4.8	4.1	4.1	4.2
Patterson Pass/	1-Hour	20.0	6.6	6.8	6.6	6.4	8.7
Byron Highway	8-Hour	9.0	4.0	4.8	4.0	3.8	5.2
Patterson Pass/	1-Hour	20.0	5.8	9.4	9.0	5.9	7.4
Grant Line	8-Hour	9.0	3.5	5.6	5.4	3.5	4.4
Mountain House/	1-Hour	20.0	6.5	6.7	6.8	6.4	7.6
Grant Line	8-Hour	9.0	3.9	4.0	4.1	3.8	4.6
Grant Line/	1-Hour	20.0	7.1	7.6	7.5	6.3	7.6
Byron Highway	8-Hour	9.0	4.3	4.6	4.5	3.8	4.6
I-205 east	1-Hour	20.0	10.0	11.6	11.8	9.8	10.2
of I-580	8-Hour	9.0	6.0	7.0	7.1	5.9	6.1
I-580 west of	1-Hour	20.0	10.5	11.9	12.0	12.2	12.5
I-205	8-Hour	9.0	6.3	7.1	7.2	7.3	7.5

Notes: Case 1 = Existing.
Case 2 = With Specific Plan 1, Year 2000 (Full Employment).
Case 3 = With Specific Plan 1, Year 2000 (Expected Employment).
Case 4 = No Project, Year 2010.
Case 5 = Master Plan Buildout, Year 2010.

climate of the area during the summer months ~~combined with the fine, silty soils of the region~~ create a high potential for dust generation.

Where construction would occur upwind of previously-completed portions of the project, a potential for dust nuisance would be created. The effects of construction activities would include increased dust fall and locally-elevated levels of particulate matter. Dust fall would soil exposed surfaces, requiring more frequent washing during the construction period. Persons with pre-existing lung problems may find construction dust irritating.

The emission of particulate matter from construction is often considered a temporary source that has local effects but not regional effects. Considering the size and long buildout period for the project,

however, construction is likely to affect regional air quality as well. An approximate estimate of uncontrolled construction dust emissions over a 25-year buildout period is 7,736 tons of PM-10, which averages about 0.8 ton per day.[1] The increase would be partially offset by the elimination of agricultural activities on the site, but existing agricultural PM-10 emissions would represent only a small fraction of construction emissions.

The Draft Master Plan contains a program for mitigating construction air impacts. Objective 6, Air Quality and Transportation Management (Appendix C), and related policies and implementations include the development of communitywide regulations that specify construction practices according to the provisions of the SJVUAPCD. The SJVUAPCD has recently (effective 10 December 1993) adopted Rule 8020, which requires the use of watering, soil stabilization, and removal of mud or dirt carried out onto public roadways. There are, however, additional measures that would reduce fugitive dust and general emissions from construction not currently required by Rule 8020.

Mitigation Measure M4.13-5

The Implementation under Objective 1 in Construction Program for Air Quality (Appendix C) should be amended to include the following:

"a) Transport of Materials. All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.

~~*"b) Vehicular Speeds. Vehicular speeds at construction sites shall be limited to 15 mph.*~~

"c ***b)*** *Equipment Maintenance. All internal combustion engine driven equipment shall be properly maintained and well tuned according to the manufacturer's specifications."*

SPECIFIC PLAN I

Many Draft Master Plan strategies for air quality mitigation would be implemented with development of Specific Plan I. The bulk of the measures related to land use, circulation, and infrastructure would be implemented at the Specific Plan stage. Those measures related to development and design standards would be implemented at the Tentative Map stage. Prior to ~~occupancy of~~ the first ~~residential unit~~ **Development Permit**, the implementation of Transportation Demand Management **Program** would occur.

Impact S4.13-1 (C)

Specific Plan I does not include a 500-foot buffer along the western site boundary.

[1] It has been assumed that the PM-10 fraction of total suspended particulates is 50 percent, and that the period of active construction for any site averages three months. The acreage affected by construction activities excludes acreages for resource conservation, marina, landscaped easements, and buffers. The emission factor used was 1.2 tons/month/acre (U.S. EPA, 1985).

The Draft Specific Plan I proposes residential uses along a portion of the western boundary of the site, adjoining agricultural lands. This could result in land use conflicts from agricultural practices. The recommended revisions to the Draft Master Plan include a 500-foot buffer along the western site boundary, either on- or off-site, to mitigate air quality impacts from agricultural activities. The Specific Plan I land use map does not contain this buffer.

Mitigation Measure S4.13-1 (C)

Refer to Mitigation Measure M4.13-2.

Impact S4.13-2 (C,O,M)

The project would increase regional emissions of criteria pollutants through new vehicle travel and area-source emissions associated with residential and industrial uses in excess of threshold levels established by the San Joaquin Valley Unified Air Pollution Control District. These emissions would add to the regional emission burdens within the San Joaquin Valley Air Basin and the adjacent San Francisco Bay Air Basin, and delay eventual attainment of air quality standards for ozone and suspended particulate matter (PM-10).

Impacts of Specific Plan I on regional air quality and local carbon monoxide concentrations are shown in Tables 4.13-1 and 4.13-2, respectively, for Full Employment and Expected Employment scenarios for year 2000. The results of the carbon monoxide estimates (Table 4.13-2) indicate that emissions at local and regional intersections would not exceed State and Federal ambient air quality standards.

Buildout of Specific Plan I would result in regional emissions of pollutants exceeding threshold levels (Table 4.13-1) of 150 pounds per day for ozone precursors and 80 pounds per day for PM-10. **These impacts are significant and unavoidable.**

Mitigation Measure S4.13-2 (C,O,M)

Refer to Mitigation Measure M4.13-1.

Impact S4.13-3 (C,O,M)

Construction activities associated with Specific Plan I would generate dust and particulate matter that could exceed the PM-10 threshold of significance.

As noted above, impacts of Specific Plan I include generation of PM-10 above the regulatory threshold of 80 pounds per day.

Mitigation Measure S4.13-3 (C,O,M)

Refer to Mitigation Measure M4.13-5.