conditions would essentially be the same with or without the proposed project's contribution, then it may be concluded that the effect is not significant. According to Section 15130(a)(1), "an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR." The basis for the analysis of cumulative impacts is dependent on the nature of the issue.

Cumulative impact analysis may be conducted and presented by either of two methods: (1) a list of past, present, and probable activities producing related or cumulative impacts; or (2) a summary of projections contained in an adopted general plan or related planning document. The summary approach was utilized for the near-term analysis presented below. The cumulative impacts of past, present, and probable future projects that have occurred or will likely occur in the Project site's proximity (known as "cumulative projects") are presented in Figure 7.

As discussed in Section 4.2.1.4, Project emissions of VOC, NO_X, PM_{10}, and $PM_{2.5}$ during construction would be below the screening-level thresholds and would result in a less than significant air quality impact. Based on the information from the TIA, there are 41 cumulative projects expected to contribute to the overall growth within the 5-mile buffer area. Based on research conducted for the cumulative condition, 3 County of San Diego projects, 31 City of San Marcos projects, and 7 City of Escondido projects were identified for inclusion in the air quality study. The following is a brief description of each of the cumulative projects in the general vicinity of the Project.

COUNTY OF SAN DIEGO

1. **Harmony Grove Industrial Park** is a 13.53-acre industrial development located at the Enterprise Street/Andreasen Drive intersection.

2. **Harmony Grove Meadows** proposes the development of 216 single family detached DUs in the County of San Diego.

3. **Harmony Grove Village South** is a parcel located southeast of Harmony Grove Village project bounded by Country Club Drive to the northwest, Cordrey Drive to the west, and undeveloped land to the north. The project proposes the development of 453 single-family homes on 111 acres.

CITY OF SAN MARCOS

1. **University District Specific Plan –** The 194 acre proposed project is located on Twin Oaks Valley Road, north of Discovery Street. The project proposes 1,000,000 square feet of commercial, 938,000 square feet of office space, 2,600 units of mixed-use residential, 800 units of student housing, and 450 hotel rooms.

2. **Palomar Station** is a proposed mixed-use developed that consists of 333 residential units, 55,260 square feet of commercial, and 9,800square feet of office space. The project is located on Las Posas Road both north and south of Armorlite Drive.

3. **San Marcos Creek District Specific Plan** is a proposed mixed-use development that consists of 2,300 residential units, 1.3 million square feet of commercial, and 589,000 square feet of office space. The project is located on San Marcos Boulevard between Via Vera Cruz and SR-78.

4. **Rancho Santalina** is a 237-unit residential development located north of Las Flores Drive and South Santa Fe Road.

5. **San Elijo Hills** is a specific plan area that consists of 3,398 residential units, 97,000 square feet of commercial, 100,000 square feet of office space, 1,050 acres of open space and 59 acres for elementary school use. The project is located near the intersection of San Elijo Hills and Elfin Forest Road.

6. **Marketplace @ Twin Oaks** is a proposed mixed-use development that consists of a 168,419-square foot shopping center, a 2-story and a 3-story office building. The project is located near the southwest corner of the intersection of Twin Oaks Valley Road and San Marcos Boulevard.

7. **University of St. Augustine** is a proposed physical therapy graduate school consisting of 77,500 square feet in Phase 1 and 44,000 square feet in Phase 2. The project is located at 700 Windy Point Drive.

8. **Pacific Industrial No.1** is a proposed 22,160-square foot industrial building. The project is located on Pacific Street, north of Grand Avenue.

9. **Old Creek Ranch** is a proposed development consisting of 401 single-family homes, 1,123 multi-family homes, 103 acres light industrial and 181 acres of open space on 416 total acres. The project is located on San Elijo Road east of Rancho Santa Fe Road.
10. **Kachay Homes** is a proposed development consisting of 8 single-family homes on a one-acre lot subdivision. The project is located on the southeast corner of Richland and Mulberry Road.

11. **Kaiser Hospital Medical Office** is a 3-story, 70,667-square foot outpatient medical office building and 335 parking stalls. The project is located at 400 Craven Road.

12. **Westlake Village** is a proposed mixed-use development containing 105 residential units and 5,000 square feet of commercial space located on Autumn Drive.

13. **Heritage Ranch** is an approved 16 unit residential development on Richland Road.

14. **East Gate** proposes a mixed-use development of 42 multi-family affordable housing units and 11,285 square feet of retail/commercial. The site is located on the northwest corner of Grand Avenue and Future Creekside Road.

Project Boundary

County of San Diego

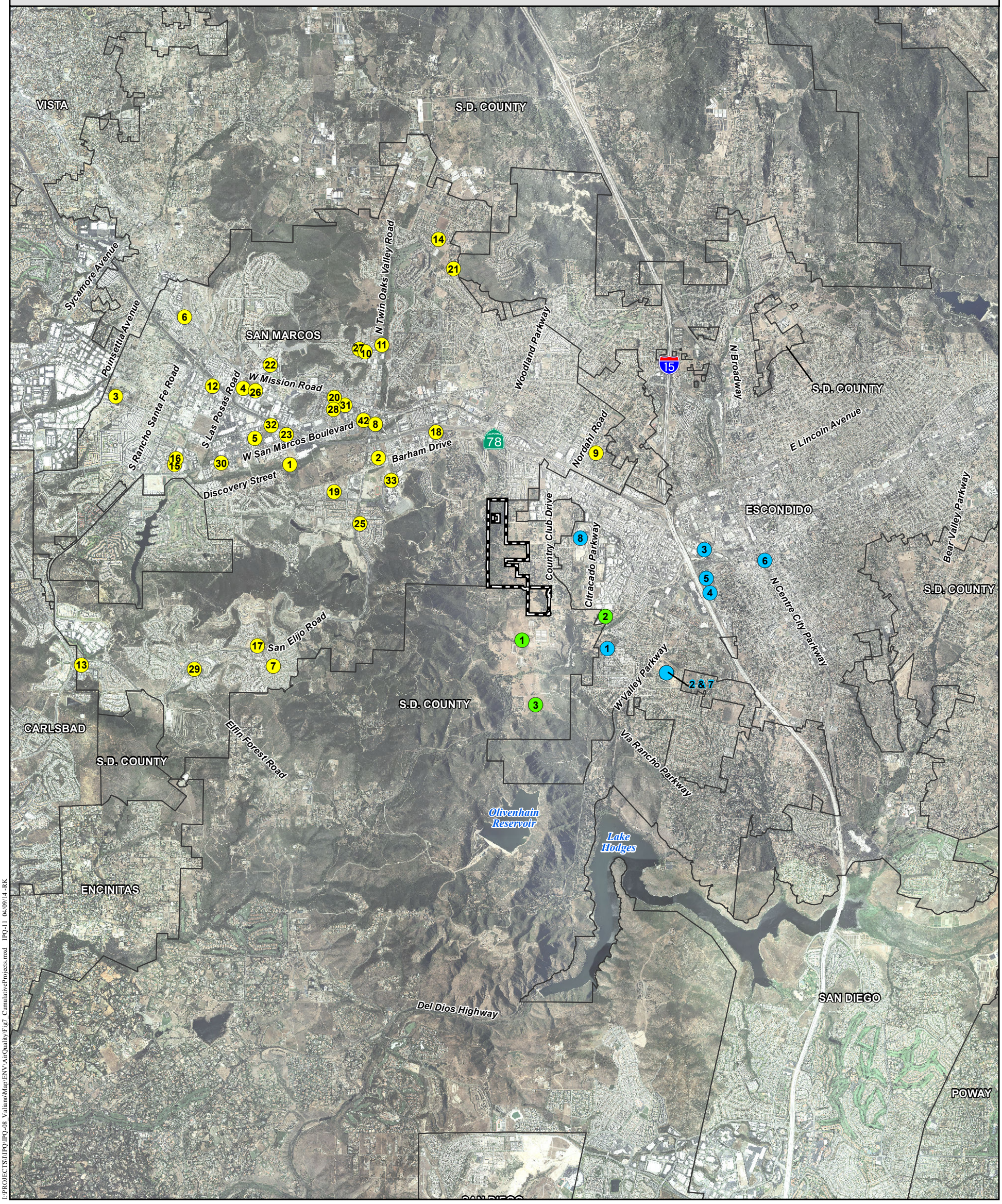
1. Harmony Grove Village
2. Harmony Grove Industrial Park
3. Harmony Grove Meadows

City of San Marcos

1. University Office and Medical Park
2. University District Specific Plan
3. Poinsettia Arbor
4. Palomar Station (2)
5. San Marcos Creek District Specific Plan
6. Rancho Santalina
7. San Elijo Hills
8. Civic Center Marketplace
9. Nordahl Medical Center
10. University of St. Augustine
11. Twin Valley Light Industrial Building
12. Pacific Industrial No. 1
13. Old Creek Ranch
14. Kachay Homes
15. High Tech High School (Interim Facility)
16. High Tech High School (Interim Facility)
17. San Elijo Sports Club
18. Campus Pointe Office Building
19. Kaiser Medical Office Building
20. Westlake Village
21. Heritage Ranch
22. Palomar College Master Plan
23. East Gate
24. Hotel
25. Campus Pointe II
26. Davia Village
27. Windy Point Development
28. Parkview Apartments
29. San Elijo Hills Town Center
30. Main Street Plaza
31. City of San Marcos, 31, Richmar Specific Plan
32. The Residences at Creekside and the Shoppes at Creekside
33. The Quad at CSUSM
34. Marketplace @ Twin Oaks

City of Escondido

1. Citracado Parkway Extension
2. Citracado High School
3. Escondido Asphalt Plant Expansion
4. Springhill Suites by Marriott
5. City of Escondido, 5, 350 La Terraza Boulevard
6. Citysquare Downtown Residential
7. Del Lago Academy
8. Escondido Research & Technology Center (ERTC)



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Cumulative Projects

VALIANO

HELIX Environmental Planning

0 6,000 Feet

Figure 7

15. **Campus Pointe II** proposed to construct 108 residential units and 10,000 square feet of retail space (previously approved as "The Quorum"). The grading phase was underway as of June 2012 with the residential portion under construction.

16. **Davia Village (Milano Holdings, Inc.)** proposes a mixed-use project of 3 stories, 368 residential apartments, 19,855 square feet of commercial/retail, and 8,895 square feet of live/work units. The project is located at 1001 Armorlite Drive.

17. **Windy Point Development** is four proposed light industrial buildings and three office buildings on Borden Road at the extension of Windy Way. An application has been submitted to modify the industrial buildings to an office park.

18. **Parkview Apartments** is a proposed development of 81 affordable housing units and 4,500 square feet of commercial development. The project is located at 210-262 Chinaberry and 351 Autumn Drive.

19. **San Elijo Hills Town Center** is a mixed-use development that consists of 12,000 square feet of ground-floor commercial space and 12 condominiums. The project is located at San Elijo Road and Elfin Forest Road.

20. **Main Street Plaza** is a proposed mixed-use development that consists of 475 apartments, 62,080 square feet of commercial use, 14,800 square feet of office use, 40,000 square feet of residential storage, and a 4,559 gym/lounge. The project is located in the San Marcos Creek District Specific Plan area at 1167 West San Marcos Boulevard.

21. **Richmar Specific Plan** is the evaluation of a Specific Plan focusing on mixed-use development between Richmar Avenue and Mission Road and along Autumn Drive with extension of Tiger Way. The project is located south of Richmar Avenue to the area north of San Marcos Elementary School, south of Autumn Drive, and from Paseo de Oro to Firebird.

22. **The Promenade at Creekside** is a proposed mixed-use development that consists of 98 apartments and 31,000 square feet of commercial use. The project is located in the San Marcos Creek District Specific Plan area at South Bent Avenue and Grand Avenue.

23. **The Quad at CSUSM** is a proposed 5-story mixed-use building consisting of 174,000 square feet of student housing and retail space.

24. **Sonic Drive-In** is a proposed 1,795-square foot drive-in restaurant with 899 square feet of outside dining area. The project is located at the southeast corner of Grand Avenue and Via Vera Cruz.

25. **Pacific Commercial** is a project proposing development of 31,776 square feet of commercial space on a 2.77 acre lot at the northeast corner of Grand Avenue and Pacific Street.

26. **Nicholas Banche** is a proposed development of 11 single-family homes in the area of Poinsettia Avenue and Specialty Drive.

27. **Candera** is a partially complete development consisting of 50 multi-family units and 8 single-family homes. The project is located at Bougher Road and Via Camellia.

28. **Leigh Hanson site** is a proposed Specific Plan Amendment to allow construction of 346 dwelling units consisting of single-family and duplex units, and a K-8 school. The project is located on Twin Oaks Valley Road, south of Craven Road.

29. **San Marcos Highlands** is a proposed project consisting of 198 single-family homes located at the northern terminus of Las Posas Road.

30. **UK Investments, LLC** is a proposed project consisting of 35 units of multi-family housing on North Alda Drive.

31. **Shane Park Plaza** is a proposed mixed-use neighborhood shopping center consisting of 6,138 square feet of retail use and 19 multi-family dwelling units. The project is located on Rancho Santa Fe Road between Grand Avenue and La Mirada Drive.

CITY OF ESCONDIDO

1. **Citracado High School** is located south of W. Valley Parkway and north of Citracado Parkway. The high school is expected to serve 800 students in grades 9 through 12.

2. **Escondido Asphalt Expansion** is located at 500 North Tulip Street and proposes to expand the operations of an existing asphalt concrete plant from 250,000 tons per year of material to 400,000 tons per year.

3. **Springhill Suites by Marriott** is located at 300 La Terraza Boulevard in the City of Escondido. The project consists of 105 hotel rooms.

4. **350 La Terraza Boulevard** is located on La Terraza Boulevard north of 9th Avenue and south of Valley Parkway in the City of Escondido. The project consists of a 44,000-square foot office building.

5. **City Square Residential** project is located at the southeast corner of the Centre City Parkway/2nd Avenue intersection in the City of Escondido. This project consists of developing 102 multi-family DUs, 20 of which are already developed.

6. **Del Lago Academy** is a magnet biotechnology high school projected to open in fall 2013. It is located on a 34-acre site off W. Valley Parkway near Citracado Parkway and is expected to serve up to 800 students.

7. **Escondido Research and Technology Center (ERTC)** is a research center comprising of 208 acres located along the future alignment of Citracado Parkway in the City of Escondido.

The SDAB has been designated as a federal nonattainment area for ozone, and a state nonattainment area for ozone, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SDAB. As discussed above, the emissions of all criteria pollutants, including PM_{10} and $PM_{2.5}$, would be well below the significance levels during construction. Construction would be temporary and consistent with the size and scale of the Project. Construction activities required for the implementation of the Project would not result in significant impacts to air quality. However, it is possible that construction associated with several other projects would occur in the general vicinity of the Project at the same time, and cumulative construction projects would result in a cumulatively considerable net increase in VOC, NO_X, PM_{10} and $PM_{2.5}$. This cumulative impact would be significant.

4.3.1.3 *Mitigation Measures and Design Considerations*

Control measures for construction are discussed in Section 4.2.1.3. As discussed in that section, implementation of standard construction mitigation measures controlling fugitive dust emissions would minimize the Project's contribution to cumulative air quality impacts from construction activities. Cumulative projects would also need to comply with SDAPCD Rules for dust control and construction equipment. There are no other feasible mitigation measures that would reduce the cumulative emissions below a level of significance for construction.

4.3.1.4 *Significance of Impacts Following Mitigation*

Project construction would result in a cumulatively considerable net increase in emissions of VOC, NO_X, PM_{10} and $PM_{2.5}$. Impacts would remain significant even with design considerations to reduce fugitive dust during construction. Project construction would therefore result in a significant, but temporary, cumulative impact to the ambient air quality that would be unmitigated.

4.3.2 Operational Impacts

As discussed above, based on the County Guidelines (2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in NO_X, VOCs, PM_{10}, and $PM_{2.5}$. In accordance with the guidelines, a project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of nonattainment pollutants would also have a cumulatively considerable net increase. Also, projects that cause road intersections to operate at or below a LOS E and create a CO hot spot create a cumulatively considerable net increase of CO.

4.3.2.1 *Guidelines for the Determination of Significance*

- Would the project conform to the RAQS and/or have a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_X, and/or VOCs, which would also have a significant cumulatively considerable net increase in these emissions?

- Would the project cause road intersections or roadway segments to operate at or below LOS E and create a CO hotspot that would result in a cumulatively considerable net increase of CO?

4.3.2.2 *Significance of Impacts Prior to Mitigation*

As stated in Section 4.3.1.2, in addition to the Project, there are 44 cumulative projects expected to contribute to the overall growth within the 5-mile buffer area. The current General Plan designations for the Project site are SR-1 and SR-2, and the Regional Category is Semi Rural. Under the current General Plan, a maximum of 118 DU would be permitted (at a minimum of 1-acre lot sizes). Applying the average trip rate from the TIA (11.3 trips per dwelling unit), approximately 1,334 ADT would be generated by the existing zoning. The proposed 334 DUs associated with the Project would generate approximately 3,786 ADT, a net increase from the current zoning of 2,452 ADT. To estimate emissions associated with Project-generated traffic, the CalEEMod model was used to determine the net increase in criteria pollutants. Table 20 presents a summary of the net increases in criteria pollutants, which shows that the Project would cumulatively contribute to the regional air quality.

Table 20
ADDITIONAL OPERATIONAL EMISSIONS OF PROJECT DENSITY AS COMPARED TO THE GENERAL PLAN DENSITY ALLOWANCE

Category	VOC	NO_X	PM_{10}	$PM_{2.5}$
	lbs/day			
Area	7	<1	<1	<1
Energy	<1	1	<1	<1
Mobile	4	9	8	2
TOTAL	**11**	**10**	**8**	**3**

Note: Emissions were calculated for both summer and winter months, and the highest value is shown here.

Based on the analysis presented in Section 4.1, the Project would be inconsistent with the RAQS and SIP. As a result, the cumulative considerable contribution to the regional air quality impact is considered significant.

Carbon Monoxide

The TIA (LLG 2015) has identified 10 intersections that would result in a cumulatively significant decline in level of service:

1. E. Barham Drive / S. Twin Oaks Valley Road
2. E. Barham Drive / Woodland Parkway
3. Nordahl Road / SR 78 Westbound Ramps
4. Auto Park Way at Mission Avenue
5. Auto Park Way / Country Club Drive
6. Valley Parkway / 9th Avenue
7. Valley Parkway / Auto Park Way
8. Valley Parkway / I-15 SB Ramps
9. Valley Parkway / I-15 Northbound Ramps
10. Harmony Grove Road / Kauana Loa Drive

Project-generated vehicle trips would increase traffic volumes at roadway intersections in the site vicinity once the Project becomes operational. During periods of near-calm winds, heavily congested intersections can produce elevated levels of CO that could potentially impact nearby sensitive receptors. Therefore, a CO hot spot analysis was conducted to determine whether the Project would contribute to a violation of the ambient air quality standards for CO at any local intersections.

As stated above, localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The *Transportation Project-Level Carbon Monoxide Protocol* (Garza et al. 1997) was followed to determine whether a CO hot spot is likely to form due to project-generated traffic. In accordance with the Protocol, CO hot spots are typically evaluated when (a) the level of service (LOS) of an intersection decreases to a LOS E or worse; (b) signalization and/or channelization is added to an intersection; and (c) sensitive receptors such as residences, commercial developments, schools, hospitals, etc. are located in the vicinity of the affected intersection. In general, CO hot spots would be anticipated near affected intersections because operation of vehicles in the vicinity of congested intersections involves vehicle stopping and idling for extended periods.

Projects involving traffic impacts may result in the formation of locally high concentrations of CO, known as CO hot spots. To verify that the Project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hot spots was conducted.

CALINE4 modeling was conducted for the intersections identified above. Modeling was conducted based on the guidance in Appendix B of the Protocol to calculate maximum predicted 1-hour CO concentrations. As recommended in the Protocol, predicted 1-hour CO concentrations were then scaled to evaluate maximum predicted 8-hour CO concentrations using the recommended scaling factor of 0.7 for urban locations.

Traffic volume inputs to the CALINE4 model were obtained from the TIA. The *Transportation Project-Level Carbon Monoxide Protocol* requires the modeler to model the top intersections based on the worst LOS, and the highest traffic volumes. Some intersections may fall into both

the highest traffic volumes and worst LOS categories. The *Transportation Project-Level Carbon Monoxide Protocol* assumed that if the selected intersections do not show an exceedance of the NAAQS, none of the other intersections will. This conclusion is based on the assumption that these intersections will have the highest CO impacts, and that any intersections with less traffic volumes and congestion will have lower ambient air quality impacts. As recommended in the Protocol, receptors were located at locations that were approximately 3 meters (10 feet) from the mixing zone, and at a height of 1.8 meters (6 feet). For conservative purposes, emission factors from the EMFAC2011 model for the year 2020 were used in the CALINE4 model (earliest year expected for full occupation of the Project site).

In accordance with the Protocol, it is also necessary to estimate future background CO concentrations in the Project vicinity to determine the potential impact plus background and evaluate the potential for CO hot spots due to the Project. The existing maximum 1-hour and 8-hour background concentrations of CO that was measured at the Escondido monitoring station of 5.6 and 3.19 ppm were used to represent future maximum background 1-hour and 8-hour CO concentrations. CO concentrations in the future may be lower as inspection and maintenance programs and more stringent emission controls are placed on vehicles.

The CALINE4 model outputs are provided in Appendix E of this report. Table 21 presents a list of the top four intersections with the worst LOS and the highest traffic volumes, and a summary of the predicted CO concentrations (impact plus background) for the intersections evaluated for the Existing plus Cumulative plus Project traffic for the affected intersections. As shown in Table 21, the predicted CO concentrations would be substantially below the 1-hour and 8-hour NAAQS and CAAQS for CO shown in Table 1 of this report. Therefore, no exceedances of the CO standard are predicted, and the Project would not cause or contribute to a violation of the air quality standard. As shown in Table 21, all impacts, when added to background CO concentrations, would be below the CAAQS for both the 1-hour and 8-hour averaging periods; therefore, the Project would not result in a significant cumulative impact for CO.

Table 21 CO HOT SPOTS MODELING RESULTS			
Intersection	**Maximum 1-hour CO Concentration plus Background (ppm) (CAAQS = 20 ppm)**		**Maximum 8-hour CO Concentration plus Background (ppm) (CAAQS = 9 ppm)**
Existing Plus Project Plus Cumulative			
	am	**pm**	
1. E. Barham Dr/S. Twin Oaks Valley Road	7.9	8.5	5.2
6. Auto Park Way/Mission Avenue	7.5	7.7	4.7
8. Valley Pkwy / 9th Avenue	7.1	7.1	4.2
10. Valley Pkwy / I-15 SB Ramps	7.2	7.2	4.3
CAAQS Standard	20	20	9.0
Exceedance?	No	No	No

Notes:
CALINE4 dispersion model output sheets and EMFAC2007 emission factors are provided in Appendix E.
ppm = parts per million
Peak hour traffic volumes are based on the TIA prepared for the Project by LLG Engineers 2015.
Highest 3 yrs SDAPCD (2007-2011) 1-hour ambient background concentration (5.6 ppm) + 2020 modeled CO 1- hour contribution.
Highest 3 yrs SDAPCD 8-hour ambient background concentration (3.19 ppm) multiply by 1-hour/8-hour conversion factor of 0.7 and then add the 2020 modeled CO 8-hour contribution.

4.3.2.3 *Mitigation Measures and Design Considerations*

As discussed in Section 4.1.3, because the Project addresses several RAQS control measures and the General Plan goals that are relevant to the Project site, there are no additional measures available, short of reducing the size of the Project.

While the cumulative CO emission would be less than significant, the Project is calculated to have cumulative traffic impacts at ten intersections. The Project Applicant would pay the appropriate Transportation Impact Fee (TIF), which would mitigate the Project's cumulative impacts. The TIF Program identifies transportation facilities needed to address cumulative impacts within designate areas of the County (TIF Areas) and then provides for payment of fees to cover a project's "fair share" of the cost. TIF fees are segregated by TIF Area and are used to help fund transportation improvements within that Area. The Project is located within the San Dieguito TIF Area. The Project should pay the appropriate TIF for impacted locations identified in the TIF Program.

4.3.2.4 *Significance of Impacts following Mitigation*

The Project would result in a significant cumulatively considerable impact associated with conformance to the regional air quality plan because the Project, along with all other planned and reasonably foreseeable projects within the San Marcos and Escondido Subregional Area, exceed the growth projections in the SANDAG growth forecasts for the area used in the 2009 RAQS.

4.4 Impacts to Sensitive Receptors

4.4.1 Guidelines for the Determination of Significance

- Would the project expose sensitive receptors to substantial pollutant concentrations?

- Would the project place sensitive receptors near CO "hot spots" or create CO "hot spots" near sensitive receptors?

- Would project implementation result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology or a health HI greater than 1, and thus be deemed as having a potentially significant impact?

Air quality regulators typically define "sensitive receptors" as schools, hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. However, for the purpose of CEQA analysis, the County definition of "sensitive receptors" also includes residences (County 2007). Existing sensitive receptors within ¼ mile of the Project vicinity include several existing residence to the west, northeast, east, and southeast. There are no schools, hospitals, or other non-residence sensitive receptors within ¼ mile of the Project site. The two primary emissions of concern for impacts to sensitive receptors are CO and DPM. Figure 5 presents the location of sensitive receptors.

4.4.2 Significance of Impacts Prior to Mitigation

CO Hot Spots Analysis

The discussions and results of the CO hot spot analysis were previously mentioned in Section 4.3.2.2. As previously presented in Table 21, all CO impacts, when added to background CO concentrations, would be below the CAAQS for both the 1-hour and 8-hour averaging periods; therefore, the Project would not result in a significant impact for CO.

Construction-related Diesel Health Risk

DPM emissions would be released from the on-site construction equipment and from haul trucks associated with the Project. The CARB has declared that DPM from diesel engine exhaust is a TAC. Additionally, the OEHHA has determined that chronic exposure to DPM can cause carcinogenic and non-carcinogenic health effects.

The USEPA SCREEN3 model, the screening air dispersion modeling method approved by the CARB for such assessments was used to estimate concentrations of DPM from the construction of the Project. The DPM construction equipment emissions were estimated from emission calculation and amount to 1.78 pounds per day of DPM (as PM_{10} exhaust). The emissions were represented in the model as an area source equal to the size of the Project's construction area (based on the number of dwelling units which is up to 25 acres for each Neighborhood area, not

including the open space areas). An emission release height of 10 feet (3 meters) was also assumed. Receptor locations where construction impacts were calculated focused on the residential receptors located west and northeast of the Project site.

Cancer Health Risk Assessment Methodology

The cancer risk is calculated by multiplying the annual average concentrations calculated using the SCREEN3 model and an inhalation exposure factor as in Equation 1 below (Office of Environmental Health Hazard Assessment 2003).

Cancer Risk = Inhalation cancer potency factor (CPF) x Dose-inhalation

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population contributed by emission sources not related to the Project; cancer risk is expressed in terms of risk per million exposed individuals.

Dose-inhalation = (Cair x DBR x A x EF x ED) / AT

Where:

Cair = annual average concentration
DBR = daily breathing rate,
A = inhalation absorption factor
EF = exposure frequency
ED = exposure duration
AT = average time period over which the exposure is averaged.

Cair is the annual average concentration at the closest receptor calculated from SCREEN3 in $\mu g/m^3$. With the worst-case meteorological condition under SCREEN3, the highest 1-hour DPM concentration value at a residential receptor located 0.2 miles from the Project site was calculated to be 0.00582 $\mu g/m^3$. The SCREEN3 model outputs and screening health risk calculations are provided in Appendix F of this report. The other values listed in equations above are shown in Table 22.

Table 22
INHALATION EXPOSURE FACTOR VALUES FOR SENSITIVE/RESIDENTIAL RECEPTORS

Receptor	CPF (mg/kg-day)-1	DBR (liters/kg-day)	EF (days/year)	ED (years)	AT (days)
Construction (DPM)	1.1	302	260	4.0	25,550

Notes:
CPF = cancer potency factor (from Office of Environmental Health Hazard Assessment 2012)
DPM = diesel particulate matter, DBR = daily breathing rate, EF = exposure frequency
ED = exposure duration (for construction, this represents the construction period of 4 years)
AT = average time period over which the exposure is averaged.
Source: Bay Area Air Quality Management District, 2012.

Applying Equations 1 and 2 with the values for the various factors shown in Table 22, the Cancer Risk is calculated as follows:

Construction Cancer Risk DPM = CDPM (average DPM concentration from SCREEN3 in $\mu g/m^3$) x 1.4 (risk per million for sensitive/residential receptors)

Non-Cancer Health Risk Characterization

Chronic Non-Cancer Impacts

Exposures to TACs such as DPM can also cause chronic (long-term) and acute (short-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks is expressed as an HI. The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the REL. When evaluating chronic non-cancer effects due to TAC exposures, a hazard quotient (HQ) is established for each individual TAC as follows and for each target organ affected by the individual TAC:

HI= Cair/REL

Where:

HI = chronic hazard index
Cair = Annual average concentration ($\mu g/m^3$)
REL = Chronic Reference Exposure Level ($\mu g/m^3$)

To evaluate the potential for adverse non-cancer health effects from simultaneous exposure to multiple TACs, the HQs for all TACs that affect the same target organ are summed yielding a hazard index (HI) as follows:

$$HIto = \Sigma_{to} HQtac$$

Where:

HIto = sum of the hazard quotients for all TACs affecting the same target organ
HQtac = hazard quotient for TAC and target organ.

OEHHA has assigned a chronic non-cancer REL of 5 μg/m^3 for DPM (OEHHA 2012). DPM has effects on the respiratory system, which accounts for essentially all of the potential chronic non-cancer hazards from DPM. Therefore, the only HI calculated was for the respiratory system.

Table 23 provides the results of the construction health risk assessment for project construction along with the County's Guidelines for Determining Significance health risk thresholds. As shown in the table, the construction emissions would not exceed the County's Guidelines for Determining Significance health risk thresholds for cancer risk and chronic non-cancer hazard.

Diesel exhaust particulate matter is known in the state of California to contain carcinogenic compounds. The risks associated with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure (i.e., 24 hours per day, seven days per week, 365 days per year for 70 years). Because the Project-related construction emissions of diesel exhaust would occur for less than four years, the Proposed Project would not result in long-term chronic lifetime exposure to diesel exhaust from heavy duty diesel equipment. Therefore, air quality impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

Table 23
CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS

Metric	Dispersion Model Estimate[1]	District's Significance Threshold	Exceeds Threshold?
Cancer Risk[2]	0.008 in 1 million	1 in 1 million	No
Chronic Non-Cancer Hazard Index from DPM[3]	0.012	1.0	No

Source: Appendix C.
Notes:
1 Computed at the nearest sensitive receptor located approximately 10 meters (roughly 33 feet) west of the Project boundary
2 Assumes an exposure frequency of 260 days, exposure duration of 4.0 years, and an age sensitivity factor of 1 (Bay Area Air Quality Management District 2012)
3 Assumes a chronic DPM reference exposure level of 5 μg/m^3 (Office of Environmental Health Hazard Assessment 2012)

Operation-related Health Risk

Residential development projects do not typically generate any TAC emissions. Therefore, the operational impacts of the land use in relation to generation of TACs would be less than significant.

WTWRF treatment of influent would produce emissions of TACs during reaction or degradation. As previously mentioned in Section 4.2.2.2, the emission data for the WTWRF was obtained from the San Joaquin Valley APCD's *Fugitive Air Emission Factors and Concentration Values for Wastewater Treatment Plants* (SJVAPCD 1993). Emissions are determined by the multiplications of the wastewater flow and the concentration of the pollutant. The peak daily wastewater flow was assumed to be 0.19 mgd. The following formula was used to calculate the WTWRF emissions:

Daily Emissions (lb/day) = peak daily influent flow (gal/day) x liquid conversion factor (3.785 L/gal) x toxic influent concentration (µg/L) x unit conversion factor (10-6 g/µg) x lb/453.6 g.

The annual emissions of TACs from WTWRF are summarized in Table 24. A screening health risk assessment was prepared to analyze cancer, chronic non-cancer, and acute non-cancer health risks from the facility. The cancer risk is calculated by multiplying the annual average concentrations calculated using the SCREEN3 model and the inhalation cancer unit risk and cancer potency factors for the five identified TAC compounds (i.e., benzene, chloroform, ethyl benzene, methylene chlorine, 1,4-dichlorobenzene, and TCE) through OEHHA's Technical Support Document updated in 2011. The non-cancer chronic and acute risks are calculated by dividing the REL values to the 24-hour average concentrations for each TAC compound. The screening health risk calculations for the WTWRF are provided in Appendix G of this report. The location of maximum impact (MEI) was modeled at 400 feet from the property boundary of the WTWRF study area. At this location, the modeled cancer risk is 0.027 in 1 million, the chronic non-cancer inhalation hazard index is less than one, and the acute non-cancer inhalation hazard index is less than 1. These results are less than the SDAPCD standards discussed previously. Therefore, the increased health risks from the proposed facility would be less than significant.

Table 24 WTWRF HEALTH RISK ASSESSMENT RESULTS					
Compound	**Annual Average Emissions (lbs/year)**	**Annual Ambient Conc. ($\mu g/m^3$)**	**Cancer Risk**	**Chronic Non-Cancer Risk**	**24-hr (Acute) Non-Cancer Risk**
Ammonia	0.006934	1.49E-07	-	2.99E-10	1.87E-11
Benzene	1.34E-05	2.89E-10	3.49E-09	1.93E-12	8.90E-14
Chloroform	0.000188	4.04E-09	9.27E-09	5.39E-12	1.08E-11
Ethyl Benzene	5.21E-05	1.12E-09	1.18E-09	2.24E-13	-
Hydrogen Sulfide	0.000451	9.73E-09	-	3.89E-10	9.26E-11
1,1,1-TCA	6.14E-05	1.32E-09	-	5.29E-13	7.78E-15
Methylene Chlorine	0.000181	3.89E-09	1.64E-09	3.89E-12	1.11E-13
1,4-Dichlorobenzene	0.000108	2.32E-09	1.12E-08	1.16E-12	-
Phenol	0.000227	4.89E-09	-	9.78E-12	3.37E-13
Styrene	0.000116	2.49E-09	-	1.11E-12	4.75E-14
Toluene	0.000113	2.44E-09	-	3.26E-12	2.64E-14
TCE	6.02E-05	1.30E-09	1.10E-09	8.65E-13	-
Xylene	0.000136	2.92E-09	-	1.67E-12	5.31E-14
TOTAL	**0.008641**	**-**	**0.027E-06**	**<1**	**<1**

Sources: Emission factors from SJVAPCD's Fugitive Air Emission Factors and Concentration Values for Wastewater Treatment Plants (POTWS) November 1993.
OEHHA Revised Air Toxics Hot Spots Program Technical Support Document for Unit Risk and Cancer Potency Values Updated 2011. http://oehha.ca.gov/air/hotspots/2009/AppendixA.pdf
OEHHA Acute and Chronic Reference Exposure Levels (RELs) as of August 2013.
http://oehha.ca.gov/air/allrel/html.
Notes:
Assumed hydrogen sulfide would be controlled to 90% efficiency with scrubbers or biofilters that are part of the odor control system.
Cancer risk less than 10 in a million is considered less than significant.
Chronic and acute non-cancer risks less than 1 are considered less than significant.

4.4.3 Mitigation Measures and Design Considerations

No additional design consideration or mitigation is required.

4.4.4 Significance of Impacts following Mitigation

Impacts to sensitive receptors from TACs would be less than significant.

4.5 Odor Impacts

4.5.1 Guidelines for the Determination of Significance

Based on the County Guidelines (2007), a project would have a significant impact if it would generate objectionable odors or place sensitive receptors next to existing objectionable odors that would affect a considerable number of persons or the public.

SDAPCD Rule 51 (Public Nuisance) and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 541700, prohibits the emission of any material that causes injury, detriment, nuisance, or annoyance to a considerable number of persons or endangers the comfort, health, or safety of the public. Projects required to obtain permits from SDAPCD, typically industrial and some commercial projects, are evaluated by SDAPCD staff for potential odor nuisance and conditions may be applied (or control equipment required), where necessary, to prevent occurrence of public nuisance. Odors emanating from agricultural operations are excluded.

4.5.2 Significance of Impacts Prior to Mitigation

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. Diesel exhaust and VOCs will be emitted during construction of the Project, which are objectionable to some; however, emissions will disperse rapidly from the Project site and therefore should not be at a level to induce a negative response. Because the construction equipment would be operating at various locations throughout the construction site, and because any operation that would occur in the vicinity of existing receptors would be temporary, impacts associated with odors during construction are not considered significant.

According to the County's Zoning Ordinance, Section 6318, "all commercial and industrial uses shall be so operated as to not emit matter causing unpleasant odors which are perceptible by the average person at or beyond any lot line of the lot containing said uses." In general, this ordinance applies to commercial and industrial land uses following development. The residential development itself would not be a source of odor impacts. According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations.

Odors from Equestrian Uses

Land uses typically associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. Some members of the public also associate objectionable odors with horses. Neighborhoods 3 and 5 would largely consist of wider and deeper lots in order to allow horse keeping. Private ownership of horses located on larger lots would not be considered a substantial odor source.

Additionally, the existing equestrian complex previously used in association with the Harmony Grove Equestrian Center, located in the southern portion of Neighborhood 5, would be retained, open to the public and privately maintained by the HOA. The complex is located approximately 400 feet west of the existing residences to the east of the Project site and 500 feet west of the proposed residences in Neighborhood 5. Portions of the existing equestrian training and boarding facility would accommodate private horse boarding; however, the distance to existing and planned residences is great enough such that any odors generated by the facility would sufficiently dissipate before reaching said residences. Therefore, the impact due to odors from equestrian uses on the Project site is considered to be less than significant.

Odors from WTWRF

Operation of the WTWRF has the potential to result in odor impacts because of the nature of the activities at the proposed facility. However, the frequency with which the facility would expose the public to objectionable odors would be minimal based on the control measures planned in the design. All WTWRF facilities with the exception of the wet weather pond would be covered to avoid uncontrolled odor release. Section 6318 of the San Diego County Zoning Ordinance states that "All commercial and industrial uses shall be so operated as not to emit matter causing unpleasant odors which are perceptible by the average person at or beyond any lot line of the lot containing said uses." Additionally, Section 6318 requires that odors be diluted by "a ratio of one volume of odorous air to eight or more volumes of clean air." Active odor control units would be located to manage gases from the wet and solids stream treatment processes. All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.

Odors are typically associated with particular steps in the wastewater treatment process. Initially, raw wastewater is transferred to the primary clarifiers where most solids are separated from the liquid portion of wastewater in the treatment process. A ferrous chloride solution is added to the raw wastewater before it enters the primary clarifiers to reduce odors at that treatment stage. Ferrous chloride molecules capture hydrogen sulfide molecules, forming insoluble compounds that precipitate out of the waste stream.

Wastewater undergoing aerobic digestion (decomposition with free oxygen) in the aeration basins emits a characteristically musty odor due to the particular type of biogases released in the process. A misting system with odor neutralizing liquids breaks down the foul smelling chemical compounds in the biogases. Chlorine gas is used to disinfect the non-potable water, which is used daily to wash down all areas of the plant.

Bio filters remove odor by capturing the odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms. Wastewater operators routinely check the digester pressure relief valves to make sure they are not venting to the outdoors and that the waste gas burner is performing optimally.

Facilities that cause nuisance odors are subject to enforcement action by the SDAPCD. The SDAPCD responds to odor complaints by investigating the complaint determining whether the odor violated SDAPCD Rule 51. The inspector will take enforcement action if the source is not in compliance with SDAPCD rules and regulations and will inform the complainant of investigation results. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors. Such means include shutdown of odor sources or requirements to control odors using add-on equipment.

The odor control design for the facility would be such that no perceptible odors would be detected by nearby residences or other sensitive receptors. Additionally, disposal of biosolids at landfill sites could also contribute to odors and increase air emissions at these end-use facilities. However, the County would only allow facilities that have addressed all site-specific impacts. Therefore, this impact would be less than significant.

Odors from Sewer Pump Station

The proposed sewer pump station system is designed to pump out wastewater several times per hour. The system would be equipped with two redundant pumps that would allow for backup operation of the pumps in the event that one pump is out of service. The wastewater system would also include chemical feed addition at the pump station to minimize odors. A back-up chemical injection system would be included for further odor control redundancy. Therefore, impacts from sewer pump station odors would be less than significant.

Moreover, the effects of objectionable odors would be localized to the immediate surrounding area and would not contribute to a cumulatively considerable odor. A list of past, present and future projects within the surrounding area were evaluated and none of these projects create objectionable odors.

4.5.3 Mitigation Measures and Design Considerations

Odor control measures for the WTWRF are discussed in Sections 1.3 and 4.5.2. As discussed in those sections, implementation of standard odor control measures would minimize the Project's contribution to objectionable odors. The Project would comply with SDAPCD Rule 51 and would not place sensitive receptors near existing odor sources that would affect a considerable number of persons or the public; therefore, no mitigation measures or additional design considerations are required.

4.5.4 Significance of Impacts following Mitigation

Due to the nature of the development, there are no significant odorous air emissions anticipated from normal operations at the Valiano development. Impacts associated with equestrian uses, and operation of the WTWRF and sewer pump station would be less than significant.

5.0 SUMMARY OF RECOMMENDED DESIGN FEATURES, IMPACTS, AND MITIGATION

The residential designations would provide housing opportunities for future residents in the vicinity, directly addressing the jobs/housing balance issues faced by the County and the residential land shortages identified by SANDAG in their forecasts for the region. However, because the Project would exceed the growth projections in the SANDAG growth forecasts for the San Marcos and Escondido Subregional Areas, as discussed in Section 4.1.2, the Project would result in a cumulatively considerable impact associated with Project potential interference with the RAQS.

In summary, the Project would result in the emission of air pollutants during the construction and operational phases of the Project. With the anticipated construction of the neighborhoods, it is possible that occupation of a neighborhood may occur concurrently with construction of another neighborhood. As shown in Table 16, the first scenario assumes that Neighborhoods 1 and 5 would be occupied and operating concurrent with construction activities of Neighborhoods 2 and 4 (vertical building and backbone infrastructure, respectively). Table 17 shows the combined emissions during operation of Neighborhoods 1, 2, 3, and 5 and vertical construction of Neighborhood 4. Operational emissions from the WTWRF are also included in both worst-case scenarios. The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions. Construction emissions would include emissions associated with fugitive dust, heavy construction equipment and construction workers commuting to and from the site.

According to the SDAPCD Rule 55 - Fugitive Dust Control, it states that no dust and/or dirt shall leave the property line, as follows:

(1) **Airborne Dust Beyond the Property Line:** No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60-minute period.

(2) **Track-Out/Carry-Out:** Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:

(i) be minimized by the use of any of the following or equally effective trackout/ carry-out and erosion control measures that apply to the Project or operation:

a. track-out grates or gravel beds at each egress point,

b. wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks:

c. secured tarps or cargo covering, watering, or treating of transported material; and

(ii) be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any

track-out/carry-out, only PM_{10}-efficient street sweepers certified to meet the most current South Coast Air Quality Management District (SCAQMD) Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

As previously mentioned in Section 4.2.1.3, the control measures listed below are those that the Project would incorporate for dust control as well as minimizing pollutant emissions from diesel equipment:

- A minimum of two applications of water during grading between dozer/scraper passes.
- Paving, chip sealing or chemical stabilization of internal roadways after completion of grading.
- Use of sweepers or water trucks to remove "track-out" at any point of public street access.
- Termination of grading if winds exceed 25 mph.
- Dirt storage piles will be stabilized by chemical binders, tarps, fencing or other erosion control.
- Disturbed areas shall be hydroseeded, landscaped, or developed as quickly as possible and as directed by the County and/or SDAPCD to reduce dust generation.
- A 15-mph speed limit will be enforced on unpaved surfaces.
- On dry days, dirt and debris spilled onto paved surfaces shall be swept up immediately to reduce resuspension of particulate matter caused by vehicle movement. Approach routes to construction sites shall be cleaned daily of construction-related dirt in dry weather.
- The Project will use building products that have at least a 10 percent recycled content.
- The Project will require the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and utilize CARB/USEPA Engine Certification Tier 4, or other equivalent methods approved by the CARB.
- Use of low-VOC coatings in accordance with SDAPCD Rule 67.
- Any blasting areas will be wet down prior to initiating the blast.

The control measures listed above constitute BMPs for dust control, diesel particulate, and construction equipment emissions. With the implementation of the fugitive dust control measures as the Project design features, the phased construction impacts would be less than significant.

Construction associated with several other projects would occur in the general vicinity of the Project, and cumulative construction projects would result in a cumulatively considerable net increase in VOC, NO_X, PM_{10} and $PM_{2.5}$. Impacts would remain significant even with design considerations listed above to reduce fugitive dust during construction. Project construction would therefore result in an unavoidably significant, but temporary, cumulative impact to the ambient air quality.

Operational emissions would be associated with traffic accessing the Valiano development, along with area sources such as natural gas fireplaces, energy use, and landscaping. Project emissions would be below the screening-level thresholds for VOCs, CO, PM_{10}, and $PM_{2.5}$ and would be less than significant for air quality.

Based on the analysis presented in Section 4.1, the Project would be inconsistent with the RAQS and SIP. It was demonstrated in Section 4.2.2.2 that operational emissions would result in a less than significant impact.

Both construction-period and operational health risk effects related to TACs would be less than significant.

Odors from general Project construction and operation of the WTWRF, sewer pump stations, and equestrian uses were evaluated.

As previously mentioned in Section 4.5.2, the control measures listed below are those that the WTWRF would incorporate for odor control:

- All WTWRF facilities, including the wet weather pond, would be covered to avoid uncontrolled odor release.
- Active odor control units would be located to manage gases from the wet and solids stream treatment processes.
- All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.
- A misting system with odor neutralizing liquids to break down the foul smelling chemical compounds in the biogases would be installed.
- Bio filters would be utilized to capture odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms.
- Wastewater operators would routinely check the digester pressure relief valves to make sure they are not venting to the outdoors and that the waste gas burner is performing optimally.

With implementation of the above odor control measures, the Project would comply with SDAPCD Rule 51 (Public Nuisance) and odor impacts would be less than significant.

6.0 OFF-SITE WASTEWATER PIPELINE OPTIONS

The following analysis includes three potential options for the provision of sewer service, in lieu of the proposed on-site wastewater treatment and water reclamation facility (WTWRF) and related facilities. These potential options include: (1) connection to the City of Escondido Hale Avenue Resource Recovery Facility (HARRF), (2) connection to Vallecitos Water District (VWD) Facilities, and (3) connection to the Harmony Grove Treatment Plant.

Different approaches to the on-site WTWRF would include the construction of the sewer pipeline and pump stations, which would convey wastewater from the Proposed Project to an off-site wastewater treatment facility.

A summary of the construction emissions associated with the installation of the wastewater and recycled water pipelines are described in the subsection below. Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceed air quality standards for ozone, CO, PM_{10}, and $PM_{2.5}$). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and the re-paving of roadways. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A large portion of the total dust emissions for the pipeline installation activities would likely be caused by construction vehicles driving on unpaved and paved surface areas and excavating and refilling soil materials.

Emissions from the construction activities of the sewer and recycled water pipeline installation activities were estimated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Road Construction Model. The model contains emission factors based on the CARB OFFROAD 2011 that were used to calculate construction equipment emissions. Heavy construction equipment requirements and associated emissions for land clearing, ground excavation, cut-and-fill operations, and re-paving activities were estimated based on the Road Construction Model default values and professional judgment. Emissions associated with worker travel to the construction site and construction truck deliveries were estimated based on default values in the model.

6.1 Option 1: Connection to the City of Escondido Hale Avenue Resource Recovery Facility (HARRF)

This option would require an out-of-services-agreement between the City of Escondido and County of San Diego. The construction pipeline activities would involve the following off-site activities:

1. Installation of approximately 2,700 linear feet of new sewer main from the new lift station 12 on the Project site to an existing City pump station, with these facilities to be located within existing City of Escondido and County of San Diego streets. This line will be owned and operated by the City of Escondido.

2. Installation of approximately 1,600 linear feet of new force main pipeline from the Project site to an existing City sewer line, with the new facilities to be located within an existing San Diego Gas & Electric (SDG&E) easement. This line will be owned and operated by the City of Escondido.

3. Abandonment of approximately 1,600 linear feet of existing sewer force main located in an existing Escondido easement. The abandonment of the force main is anticipated to be slurry fill of the line; force main removal is not anticipated.

4. Installation of approximately 200 linear feet of new recycled water pipeline from the proposed Rincon Del Diablo Municipal Water District (Rincon MWD) Reclaimed Water (RW) Pipeline, to be constructed as part of the Harmony Grove Village development, to the Project site, with the new facilities to be located within Escondido streets. This line will be owned and operated by the Rincon MWD. The Rincon MWD's existing RW system will convey RW from HARRF to the vicinity of Country Club Drive and the SDG&E easement.

Reclaimed water from HARRF can also be stored in the Wet Weather Storage on the Project site through the existing off-site RW system and the proposed RW backbone system through the Project. This will allow the City to reduce peak wet weather impacts on the City's land outfall. The backbone RW system will include a pipeline through the main arterial street in the northern portion of the Project, then, east in Mt. Whitney Road, south on Country Club Drive to the connection with the existing RW system in the vicinity of the SDG&E easement and the new lift station 12.

5. Installation of approximately 1,000 linear feet of a new sewer return line from the Wet Weather Storage to the new gravity sewer main in Country Club Drive as identified in Item 1 above. This line will be within existing County streets and will be owned and operated by the City of Escondido.

6.2 Option 2: Connection to Vallecitos Water District (VWD) Facilities (via annexation into the VWD for sewer service only)

This potential option would involve the installation of approximately 3,400 linear feet of new force main from the Project site to an existing VWD pipeline. This would require four on-site pump stations. One sewer lift station will be private and owned and operated by the Valiano HOA. The three larger lift stations will be owned and operated by the VWD and will have back-up generators. The on-site sewer system will be owned and operated by VWD.

Existing VWD pipelines would need to be upgraded as follows:

- Approximately 3,200 linear feet of pipeline through the mobile home park and on Barham Drive
- Approximately 500 linear feet of pipeline under SR-78 from Barham Drive to Rancheros Drive

Additional facilities that may require upgrading have been identified in the VWD *Water, Wastewater and Recycled Water Master Plan* (November 2010) and may be required as a condition of development by VWD or contribution through annexation and connection fees. The VWD *Water, Wastewater, and Recycled Water Master Plan Final Program EIR SCH No. 2010071073* (March 2011) includes the following capital improvement projects that are not included in the emission analysis for this Project:

- SP-2 – replace 3,200 linear feet of 21-inch sewer with 39-inch sewer
- SP-11 – replace 1,400 linear feet of 21-inch sewer with 36-inch, and install 800 linear feet of 8-inch sewer
- SP-12 – replace 2,000 linear feet of 21-inch sewer with 36-inch
- Possible improvements to the Land Outfall

6.3 Option 3: Connection to the Harmony Grove Water Reclamation Facility (expansion of the County Harmony Grove Sewer Service Area)

This option involves: (1) the installation of approximately 5,100 linear feet of force main from the Project Sewer Lift Station site to the Harmony Grove water reclamation facility, with these facilities to be located within existing Escondido/County streets; and (2) the construction of a new pump station and backup power generator at the Valiano Sewer Lift Station site. The County would own and operate the sewer lift station.

This option would require working with the County on modifications to the WRF design criteria and potentially re-rating the design flow at the WRF to include the Project's sewer flows.

6.4 Off-site Wastewater Pipeline Emissions

Though each of the three off-site wastewater pipeline options varies in the length of pipeline laid and support structures built, each option would require similar types of construction equipment and daily disturbance limits due to the similar nature of construction activity required. Therefore, the maximum daily emissions for each of the three options were estimated to be the same. Table 25 provides a summary of the maximum daily construction emission estimates during the pipeline construction period.

Table 25 ESTIMATED 2016 WORST-CASE PIPELINE CONSTRUCTION EMISSIONS						
Activities	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Pipeline Construction	11	109	53	<1	6	5

Notes:
1. Highest emission value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.

Table 26 provides the summaries of the maximum daily construction emission estimates during each construction activity overlap for construction year 2016. As noted above, it was assumed that dust control measures (watering a minimum of two times daily) would be employed to reduce emissions of fugitive dust during site grading. The maximum daily emissions are compared to the daily emission thresholds to determine significance.

Table 26 ESTIMATED 2016 WORST-CASE CONSTRUCTION EMISSIONS) – BY OVERLAPPING CONSTRUCTION ACTIVITIES						
Overlapping Construction Activities	**VOC**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	lbs/day					
Overlap 1						
Grading (N 1 & 5)	1	3	36	<1	9	5
Daily Maximum Total	1	3	36	<1	9	5
Overlap 2						
Grading (N 2)	1	3	36	<1	8	5
Drilling and Blasting (N 2)	<1	21	84	3	2	<1
Backbone Infrastructure (N 1 & 5)	1	2	23	<1	<1	<1
Off-site Pipeline Construction	11	109	53	<1	6	5
Daily Maximum Total	12	135	196	3	17	10
Overlap 3						
Backbone Infrastructure (N 1 & 5)	1	2	23	<1	<1	<1
Off-site Pipeline Construction	11	109	53	<1	6	5
Daily Maximum Total	11	110	76	<1	6	5

Table 26 (cont.)
ESTIMATED 2016 WORST-CASE CONSTRUCTION EMISSIONS) –
BY OVERLAPPING CONSTRUCTION ACTIVITIES

Overlapping Construction Activities	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	lbs/day					
Overlap 4						
Off-site Pipeline Construction	11	109	53	<1	6	5
Vertical Building (N 1 & 5)	2	9	77	<1	1	<1
Daily Maximum Total	13	118	130	<1	7	6
Significant Thresholds	75	250	550	250	100	55
Exceedance?	No	No	No	No	No	No

Notes:
1. Emissions were calculated for both summer and winter months, and the highest value is shown here.
2. USEPA Tier 4 off-Road equipment and diesel particulate filters were assumed to be utilized.
3. Fugitive dust measures were applied to control PM_{10} and $PM_{2.5}$ dust emissions.
4. N= Neighborhood

Because emissions of all criteria pollutants during construction would be below the daily thresholds, construction would, therefore, not conflict with the NAAQS or CAAQS, and the construction impact is less than significant.

7.0 REFERENCES

Bay Area Air Quality Management District (BAAQMD). 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards. Version 3.0. May.

California Air Resources Board (CARB). 2013. Ambient Air Quality Standards: http://www.arb.ca.gov/aqs/aaqs2.pdf. June.

2012a. Area Designations and Maps – 2009. November.
2012b. Top 4 Measurements and Days Above the Standard Available: http://www.arb.ca.gov/adam/welcome.html. Accessed May 2012.
2009. ARB Fact Sheet: Air Pollution and Health. December 2. http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm.
2007a. EMFAC2007 Emissions Model.
2007b. OFFROAD Emission Factors.
2005. Air Quality and Land Use Handbook: A Community Health Perspective. April.
2003. Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk. October 9.
2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.
1998. Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Appendix III, Part A, Exposure Assessment.

California Department of Transportation (Caltrans). 1998. Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol.

California Office of Environmental Health Hazard Assessment (OEHHA). 2003a. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. August.
2003b. Hot Spots Analysis and Reporting Program. December 31.

Krause, Melissa. 2013. Personal communication with Julie McCall of HELIX Environmental Planning. February.

Linscott, Law and Greenspan (LLG) Engineers. 2015. Traffic Impact Analysis – Valiano. March.

Office of Environmental Health Hazard Assessment (OEHHA). 2012. OEHHA Acute, 8-hour and Chronic Reference Exposure Level (REL). February. http://oehha.ca.gov/air/allrels.html.

2011. Revised Air Toxics Program Technical Support Document for Unit Risks and Cancer Potency Factors. Appendices A, B and C Updated.
2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, CalEPA. August 2003.

San Diego, County of. 2011. General Plan. Land Use and Environmental Group, Department of Planning and Land Use, Department of Public Works. August. http://www.sdcounty.ca.gov/dplu/gpupdate.html.

2007. Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality. Land Use and Environmental Group, Department of Planning and Land Use, Department of Public Works. March 19.

San Diego County Air Pollution Control District (SDAPCD). 2012. Proposed Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County. San Diego, CA. September 12, 2012.

2010. Fact Sheet: Attainment Status. http://www.sdapcd.org/info/facts/attain.pdf. January.
2009. Regional Air Quality Strategy Revisions. http://www.sdapcd.org/planning/2009-RAQS.pdf. Accessed in May 2010.
2008. Five Year Air Quality Summary. http://www.sdapcd.org/air/reports/smog.pdf.
2007. Eight-Hour Ozone Attainment Plan for San Diego County. May.
2004. 2004 Triennial Revision of the Regional Air Quality Strategy for San Diego County. July 28.

San Joaquin Valley Air Pollution Control District (SJVAPCD) 1993. Fugitive Air Emission Factors and Concentration Values for Wastewater Treatment Plants. November.

South Coast Air Quality Management District (SCAQMD). 2011. California Emission Estimator Model (CalEEMod) Version 2013.2.2. Released October 2013.

University of California Davis (UCD). 1997. Transportation Project-Level Carbon Monoxide Protocol (CO Protocol). Institute of Transportation Studies. 1997.

United States Environmental Protection Agency (USEPA). 2014. Guidance for Facilities on Risk Management Programs (RMP). Available: http://www2.epa.gov/rmp/guidance-facilities-risk-management-programs-rmp. Last updated October 23.

2012a. Final Area Designations and Classification.
2012b. Monitor Values Report. www.epa.gov/air/data/monvals.html. Accessed January 2010.
2007. The Effects of Air Pollutants – Health Effects. http://www.epa.gov/air/oaqps/eog/course422/ap7a.html#table.
1998. Compilation of Air Pollutant Emission Factors (AP-42), Section 4.3, Waste Water Collection, Treatment and Storage. February.
1996. Compilation of Air Pollutant Emission Factors (AP-42), Section 3.1, Gasoline and Diesel Industrial Engines. October.

Western Regional Climate Center, Western U.S. Climate Summaries, California, San Diego County (049378), 2012.

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