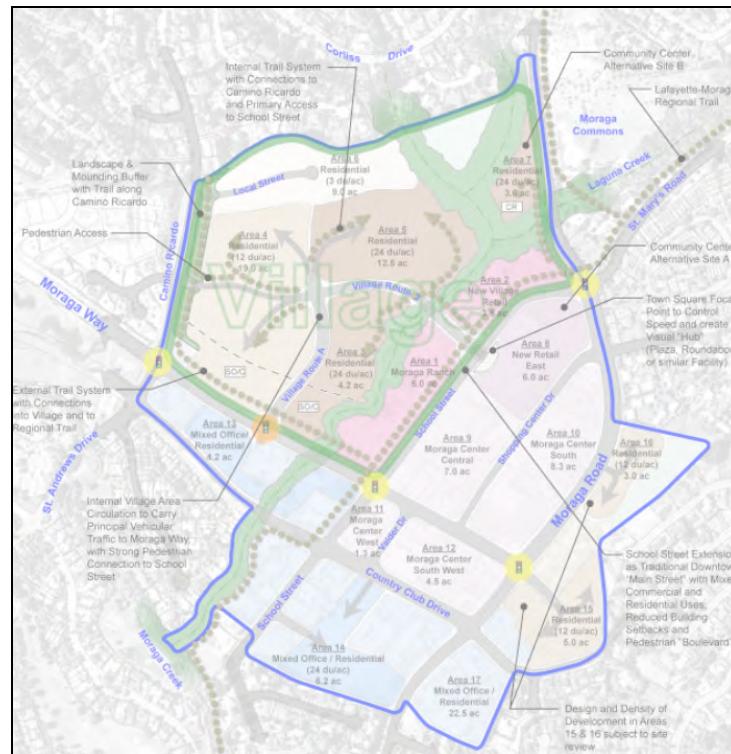


# MORAGA CENTER SPECIFIC PLAN

## Draft Environmental Impact Report



**Town of Moraga Planning Department**  
**329 Rheem Blvd, Suite 2**  
**Moraga, CA 94556**

**June 16, 2008**

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# 1 INTRODUCTION

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## 1.1 BACKGROUND

The 2002 Moraga General Plan, as outlined in Land Use policy LU3.1 and Community Design policy CD6.5, calls for the development of a specific plan for one of the two primary shopping and activity centers in the Town - the Moraga Center. The Moraga Center Specific Plan (MCSP) is the primary planning document for this 187-acre area in the Town of Moraga and presents the overall vision for the area describing the land use and transportation concepts that are to guide future development and redevelopment.

The purpose of the MCSP, consistent with the aims of the General Plan, is to adequately and appropriately address community issues (such as housing needs, new growth and resource protection), project future demands for services (such as water, sewer, and roads) and establish goals and policies for directing and managing growth. Consistent with the economic needs of the community as identified in the *Town of Moraga Market Assessment* (EPS 2006), the plan includes revitalization and renovation of the aging Moraga Shopping Center and Moraga Ranch while not exceeding Lafayette and Orinda gateway levels of traffic identified in the 2002 Moraga General Plan. Key elements of the MCSP include preservation and enjoyment of portions of the existing fallow orchard and Laguna Creek, enhanced pedestrian circulation, and increased opportunities for recreation and socialization.

## 1.2 PURPOSE OF THE EIR

Pursuant to the California Environmental Quality Act (CEQA), discretionary decisions by public agencies regarding non-exempt public and private projects are subject to environmental review. The purpose of an environmental impact report (EIR) is to identify the significant effects of the project on the environment, to identify appropriate mitigation measures and feasible alternatives to the Proposed Project consistent with Section 15126.6, which would reduce otherwise significant effects of the Proposed Project (Section 21002.1(a)). Each public agency is required to mitigate or avoid the significant effects on the environment of projects it approves or carries out whenever it is feasible or unless findings of overriding public necessity are identified and adopted.

This Draft EIR has been prepared by the Town of Moraga (lead agency) pursuant to CEQA. The purpose of this Draft EIR is to analyze the environmental effects of implementation of the Proposed Project, to indicate means to avoid or reduce possible environmental degradation, and to identify alternatives that avoid or reduce any significant adverse effects of the project. Environmental effects of the project that must be addressed include the significant adverse effects of the project, growth-inducing effects of the project, and significant cumulative effects of past, present, and reasonably

anticipated future projects. This EIR analyzes the MCSP at a "program" level. The analyses contained in the EIR are general and are not site-specific unless otherwise noted.

### **1.3 TOWN OF MORAGA GENERAL PLAN EIR**

This environmental document tiers from the Town of Moraga General Plan EIR, which is incorporated into this EIR by reference, State Clearinghouse Number 2000032129. The General Plan EIR is available for review at the Town of Moraga Planning offices during normal business hours at 329 Rheem Boulevard.

The Town of Moraga 2002 General Plan was adopted by Resolution 21-2002 on June 4, 2002. At that time, the Town also certified the EIR prepared for the General Plan Update. The General Plan EIR identified significant impacts with respect to potential land use conflicts, bicycle and parking facilities, biological resources habitat disturbance, geological hazards, cultural resources, and public services resulting from growth accommodated in the General Plan and included mitigation measures that reduce the impacts to less than significant. The EIR also concluded that the implementation of the General Plan would cause significant and unavoidable impacts with respect to traffic and circulation, including impacts to Highway 24 at the Caldecott Tunnel and intersections in Lafayette and Orinda.

### **1.4 EIR SCOPE**

The scope of this EIR was determined by the Town of Moraga, through the MCSP process, and was reexamined after distribution of the Notice of Preparation (NOP), and receipt of comment letters on the NOP. The NOP was distributed to the State Clearinghouse, public agencies and the Town residents. The potential effects of the MCSP are assessed on the following environmental and community factors:

- Land Use
- Population, Employment and Housing
- Geology, Soils and Seismicity
- Hydrology, Surface Water and Groundwater Quality
- Open Space, Visual Resources and Recreation
- Transportation, Circulation, and Parking
- Air Quality
- Noise
- Biological Resources
- Public Utilities and Hazards
- Schools
- Public Services
- Cultural Resources

## 1.5 PUBLIC INVOLVEMENT PROCESS

The Town of Moraga originally held Community Design Workshops on April 1<sup>st</sup>, 2003 and March 15<sup>th</sup>, 2006 and an estimated 150 and 200 residents and interested individuals participated, respectively. The workshops were held at the Soda Center on the St. Mary's College campus and included briefings of the MCSP process, presentations of work accomplished to-date and initial findings, and individual group discussions. All comments and key points were summarized and included in subsection 7 of the MCSP.

On July 30, 2007 the Town of Moraga issued a Notice of Preparation (NOP) for the Proposed Project. Public scoping meetings were held on August 6, 2007 and September 4, 2007 at the Joaquin Moraga Intermediate School Auditorium. Comments were recorded at these meetings. Additionally, comments were accepted in written and electronic formats through the close of business September 4, 2007.

## 1.6 REVIEW PROCESS

In accordance with CEQA, all efforts have been made during the preparation of this EIR to contact affected agencies, organizations, and persons who may have an interest in this project. This includes the circulation of the NOP dated July 30, 2007.

The Town of Moraga will hold several public hearings on the DEIR. The public is invited to attend the hearing(s) to offer oral comments on the DEIR. A Notice of Availability of the DEIR and the date of the public hearing will be published concurrently with distribution of this document. This DEIR will be available for review by the public and interested parties, agencies and organizations for a 45-day review period (from the date of the Notice of Availability). Comments may be made on the DEIR before the end of the comment period, either in writing, or verbally at the public hearings. Comments should be focused on the adequacy of the DEIR in identifying and analyzing the potential impacts of the project and ways in which the significant effects maybe avoided or mitigated.

Written comments on the DEIR should be sent to:

Town of Moraga Planning Department  
329 Rheem Boulevard, Suite 2  
Moraga, CA 94556

Following the close of this public comment period, a Final EIR (FEIR) will be prepared in order to respond to all substantive comments regarding this DEIR. Responses to comments on the DEIR will be prepared and published as a separate document. The DEIR text and technical appendices, together with the Responses to Comments document, will constitute the FEIR. The FEIR will include a Mitigation Monitoring and Reporting Program (MMRP) for all mitigation measures listed in the DEIR.

## 1.7 AGENCIES AND APPROVALS

The MCSP is in the jurisdiction of the Town of Moraga. The Town of Moraga is the Lead Agency for the preparation of environmental documentation for the proposed project under Article 4, Section 15051 of CEQA. The Town will use this EIR to support the adoption of the Specific Plan and to amend the Town's General Plan to add additional residential land use densities for the MCSP area (e.g., LU1.2, Residential Densities). The new land use designations will include Compact Residential 10-12 du/ac, Senior Residential 20 du/ac, Mixed Retail/Residential (12-20 du/ac), and Mixed Office/Residential (12-20 du/ac).

Under CEQA, other agencies that have discretionary authority over the project or aspects of the project are considered "responsible agencies." Possible responsible agencies for approval and implementation of the proposed project would include, but may not be limited to, the agencies listed below. Each of these responsible agencies may need to review this EIR, or conduct separate environmental analyses and documentation for MCSP related projects.

### 1.7.A Local Agencies

- Town of Moraga Planning Department, responsible for project planning and approval
- Contra Costa Transportation Authority, responsible for transportation planning, congestion management, and related air quality improvements in Contra Costa County
- Lamorinda Program Management Committee, responsible for determining whether a proposed General Plan Amendment is consistent with the Lamorinda Action Plan
- Moraga-Orinda Fire District, responsible for fire suppression, compliance with emergency evacuation and determination of access routes
- Central Contra Costa County Sanitation District, responsible for waste water treatment
- Central Contra Costa County Flood Control and Water Conservation District, responsible for flood control and water quality

### 1.7.B Regional Agencies

- East Bay Municipal Utility District, responsible for municipal water supply
- Bay Area Air Quality Management District, responsible for air quality management and attainment of State and federal air quality standards

- Pacific Gas and Electric, responsible for electricity and gas connections and supplies

#### **1.7.C State Agencies**

- California Department of Transportation, responsible for transportation improvements on state roads and highways
- Regional Water Quality Control Board, responsible for water quality protection and issuance of waste discharge permits pursuant to the National Pollution Discharge Elimination System.

#### **1.7.D Federal Agencies**

- The U.S. Army Corps of Engineers, responsible for watercourses and wetlands
- United States Environmental Protection Agency, responsible for enforcement water and air quality
- United States Department of Fish and Wildlife, responsible for federally listed and protected species.

#### **1.7.E Trustee Agencies**

In addition to the responsible agencies listed above, the EIR will be used by “trustee agencies”, which are those state agencies having jurisdiction by law over natural resources that could be affected by the project. In this instance there is one trustee agency that is expected to use the EIR:

- California Department of Fish & Game, responsible for protecting sensitive biological species and habitats.

### **1.8 REPORT ORGANIZATION**

The format and content of the DEIR are designed to meet the requirements of the CEQA and the State CEQA Guidelines. The report is organized into the following chapters:

Chapter 1: Introduction; describes the EIR process; the public review process; and report format. Table 1-1 presents a summary of impacts and mitigation measures.

Chapter 2: Project Location and Description; describes the Proposed Project, project objectives and the alternatives to the project.

Chapter 3: Summary of Findings; presents a brief summary of the Proposed Project and alternatives and, and their impacts and mitigation measures.

Chapter 4: Environmental Analysis; Environmental and Regulatory Settings, Impacts and Mitigation Measures; contains an analysis of each environmental impact category, including existing setting, regulatory setting, standards of significance for each impact, potential environmental impacts, and measures to mitigate those impacts.

Chapter 5: CEQA determination; discusses the long-term implementations of the Proposed Project, including: unavoidable adverse impacts, significant irreversible impacts resulting from this project, and growth-inducing aspects of the project.

The Appendices include:

Appendix A: The Notice of Preparation (July 30, 2007);

Appendix B: Letters received, and minutes of the Scoping Session

Appendix C: Moraga Center Specific Plan – Impact on Infrastructure Report (April 25, 2008)

Appendix D: Transportation Technical Support Documents

Appendix E: Air Quality Calculations and Data Sheets

Appendix F: Noise Terminology and Data Sheets

## 2 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

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### 2.1 PROJECT LOCATION

The Town of Moraga is a semi-rural community of about 17,000 residents located 18 miles east of San Francisco in central Contra Costa County. Surrounded by rolling hills, Moraga has, among other natural and community assets, top-ranking public schools and is the home of Saint Mary's College of California.

As shown in Figure 2-1, the Moraga Center Specific Plan (MCSP) area lies in the southwestern part of the central, mostly urbanized corridor of the Town approximately 1.8 miles from the other commercial area in town, the Rheem Center area; both are located on Moraga Road, the primary arterial road serving the community. The Town of Moraga is a predominantly low-density residential community and the two existing commercial centers accommodate virtually all of the retail, commercial, and office development within the Town.

### 2.2 PURPOSE AND OBJECTIVES

The MCSP has been prepared as directed by the Town of Moraga's General Plan of 2002 which included Land Use policy LU3.1 as well as Community Design policy CD6.5 which call for development of a 'specific plan' for the area around one of the Town's major shopping and activity centers—the Moraga Center. These policies provide a detailed overview of the intent for the specific plan and the desired outcomes. The policies are implemented by action IP-K1, identified as a near-term priority in the General Plan's Action Plan.

The purpose of the Specific Plan, consistent with the aims of the General Plan, is to provide a vehicle for ensuring that the commercial areas of the Town are "planned" in order to identify important community issues (such as new growth, housing needs, and environmental protection), project future demand for services (such as sewer, water, roads, etc.), anticipate potential problems (such as overloaded sewer facilities or crowded roads), and establish goals and policies for directing and managing growth. The Specific Plan is also intended to ensure that the phasing and development and potential redevelopment of the properties involved are responsive to the vision of the General Plan.

Consistent with policy direction in the Moraga 2002 General Plan, a study was undertaken by the Town, property owners, business representatives and interested community members ("stakeholders") to develop the key components of the MCSP. This process focused on preparation of a comprehensive planning policy document to facilitate new construction within the MCSP area, as a mixed-use "urban village", including incentives for renovation and revitalization of the Moraga Center and Moraga Ranch subareas, while retaining and expanding existing uses in this portion of the planning area.

The vision for the MCSP area is to create an attractive and vibrant shopping and living environment to serve the needs of the entire Moraga community.

Economic analysis undertaken as part of this Specific Plan process has revealed that much of the taxable sales involving purchases by local residents currently take place outside of Moraga. This “leakage” of retail sales does not contribute to Moraga’s general fund revenues.

Objectives for the MCSP identified by the Town of Moraga include:

- Revitalization of the existing Moraga Center through increased residential development in and around the Center.
- Expansion of retail opportunities in the vicinity of the existing Moraga Center.
- Creation of a mixed use Village that serves as an activity center for the community.
- Provision of residential housing densities that are adequate to help meet the Town’s fair-share of affordable housing goals.
- Control of maximum peak hour traffic volumes at levels equal to or less than those predicted in the Town’s General Plan EIR for the MCSP area.
- Provision of a community center to address many community-wide needs for recreational facilities.

## **2.3 PROJECT DESCRIPTION**

The Moraga 2002 General Plan provides a comprehensive, long range statement of the community’s goals and policies. As provided for in Sections 65450-65451 of the Government Code, the MCSP provides for the “systematic implementation” of the 2002 Moraga General Plan. The MCSP includes written policies, along with an illustrative Land Use Diagram, and a Development Summary Table, that identifies the mix and quantities of uses suitable for fulfilling the Plan’s Goals and Policies as delineated in Chapter 3. Consistent with the Moraga 2002 General Plan, the MCSP provides further detailed policies and programs focusing on the following components:

- (a) The distribution, location, and extent of the uses of land, including open space, within the area covered by the Specific Plan.
- (b) The proposed distribution, location, and extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities proposed to be located within the area covered by the Specific Plan and needed to support the land uses described in the Specific Plan.

**MORAGA CENTER SPECIFIC PLAN**

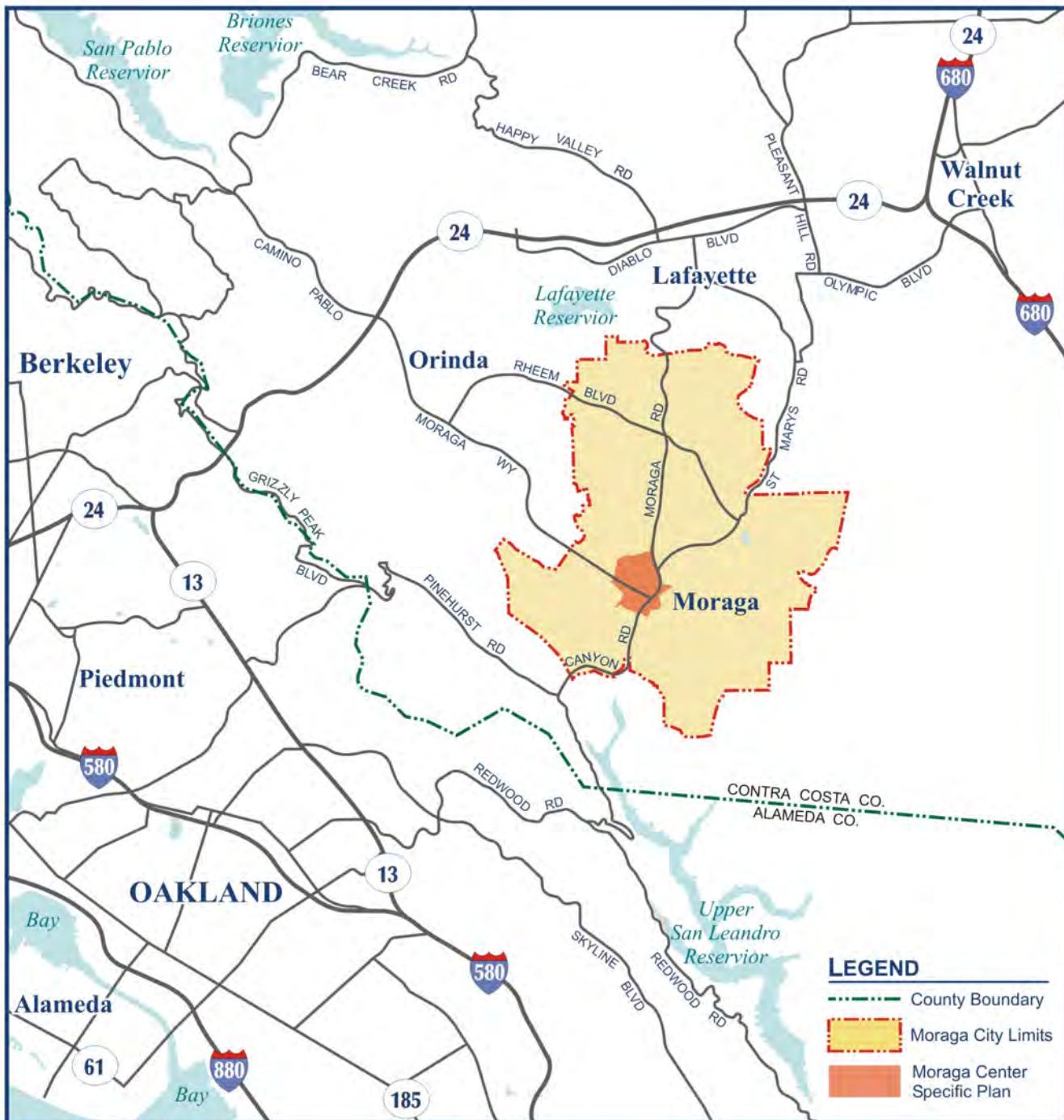
DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 2-1: Regional Location Map (Black and White)**

# MORAGA CENTER SPECIFIC PLAN

## Regional Location Map

(05.05.08)



File: MCSP-LOCMAP.cdr Date: 05-05-2008

FIGURE 2-1

- (c) Standards and criteria by which development will proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.
- (d) A program to facilitate new construction to revitalize and expand the MCSP area, including regulations, programs, public works projects, and financing measures necessary to provide for economic viability and sustainability.
- (e) A statement of the relationship of the MCSP to the 2002 Moraga General Plan.

The MCSP is the primary planning document to guide future land use and development within the 187-acre Planning Area. The plan for the MCSP area consists of a community-serving commercial core which encompasses both existing and potential new retail and service businesses that are supported and enhanced by the establishment of new residential development at various densities ranging from low (3-6 dwelling units per acre [du/ac]) to compact (10-12 du/ac) and high (12-24 du/ac). Complementary retail and residential land uses to be developed in the central part of the plan area will create an attractive, pedestrian-friendly "village" environment. With approximately 50% of the MCSP area consisting of under-developed and vacant land in the center of Moraga, the plan is characterized as an urban infill project wherein available land will be put to productive, complementary use within the existing framework of land uses and circulation. The key natural feature in the plan area - Laguna Creek - will be visually accessible to residents and visitors, while its natural course and riparian conditions will be maintained and preserved. Figure 2-2 shows the proposed Land Use and Circulation Plan for the MCSP. Section E-Plan Description of the MCSP Land Use Element provides detailed descriptions of the uses proposed for each of the sub-areas identified on Figure 2-2.

To revitalize the existing shopping center, it is anticipated that within the Specific Plan area up to 90,000 square feet (sf) of new retail and entertainment space may be constructed along with up to 50,000 sf of new office space. The addition of new retail or office space will be combined with a program to revitalize and renovate the existing Moraga Shopping Center to ensure the specific plan area incorporates a cohesive downtown "village" area. The new space and revitalization goals are intended to meet the retail and entertainment needs of Moraga residents who currently make up to 75% of their sales taxed purchases outside the Town. This new and revitalized space is further intended to reduce the needs of Moraga residents to travel out of Moraga for basic goods and services. The construction of new office space will allow Moraga professionals to work closer to home. This increased proximity could reduce travel time to work and energize the local economy with more daytime activity.

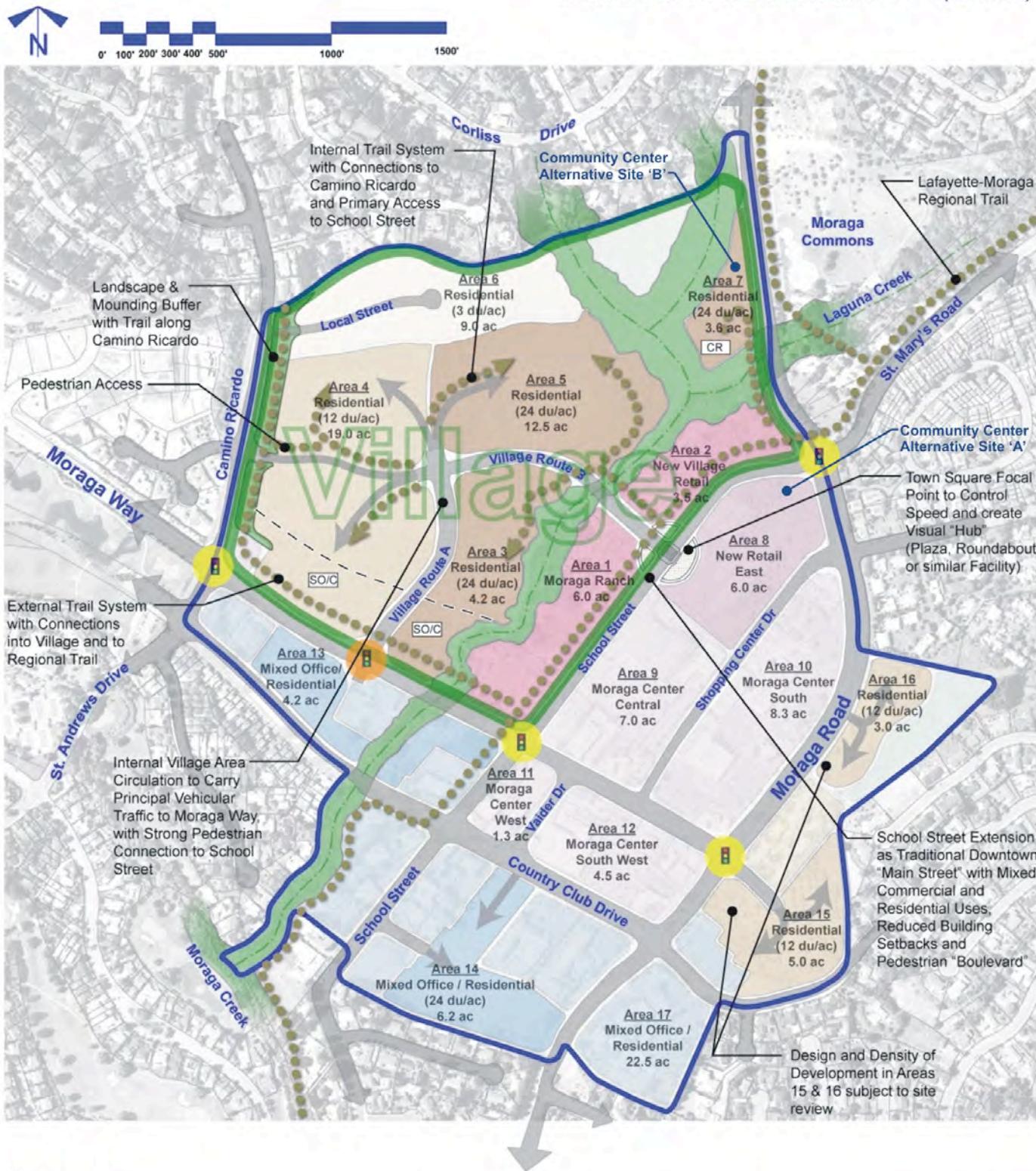
**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 2-2: Illustrative Land Use and Circulation Plan (Color)**

# MORAGA CENTER SPECIFIC PLAN

Illustrative Land Use and Circulation Plan (05.30.07)



## LEGEND

- Community Commercial
- Mixed Commercial / Residential (12-24 du/ac)
- Residential (12-24 du/ac)
- Residential (6-12 du/ac)
- Residential (3-6 du/ac)
- Public Facilities
- Open Space
- Suburban Office / Residential

- Trail System
- Village Policy Area
- Modified Signal
- Approximate Signal & Intersection Location
- Creek & Setback
- SO/C
- Residential Base Density with Suburban Office/Commercial Overlay
- CR
- Residential Base Density with Commercial Recreation Overlay

**Note: Acreages shown for 17 sub-areas reflect usable land area. See Land Use Summary Table for additional details. Specific Plan Land Use Element to provide policy on mixed-use development. Aggregate development totals to be consistent with Table 1. All roadways and improvements approximate in location.**

Figure 2-2: MCSP

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

In addition to increasing the number of jobs and sales tax revenue in the community while reducing vehicle trips, the MCSP seeks to improve the Town's job/housing balance by providing up to 100 Saint Mary's College faculty/staff and/or student housing units located in the Moraga Center vicinity. These units may reduce commute trips to Moraga and will contribute towards the Town's "fair share" of affordable regional housing as identified by the Association of Bay Area Governments (ABAG).

The MCSP addresses the need for senior housing in Moraga with up to 300 units at densities of 20 du/ac. These active senior units will contribute towards the Town's "fair share" of affordable regional housing. In addition, up to 150 assisted living/congregate care units will be provided.

To support the existing and proposed retail and office space and to spur reinvestment in the existing shopping center, the MCSP proposes up to 320 primarily compact or attached single-family residences between Camino Ricardo and Laguna Creek. Careful siting and clustering of dwelling units in this area will preserve portions of the existing fallow orchard and a buffer along the creek while making them convenient for pedestrian access to retail and commercial areas in the proposed Village Center, reducing the number of vehicle trips needed to access local-serving amenities. A portion of these 320 residential units are expected to contribute to the Town's moderate rate affordable housing goals.

Two alternative sites have been identified within the planning area for accommodation of a community center/gymnasium use. This new activity center is planned to provide a community meeting facility and to address community-wide needs for recreational facilities. Two locations are considered for the community center. Site "A" is situated on the extension of School Street within the planned retail core area. Site "B" is located across Moraga Road from the Moraga Commons on 3.6 acres partially owned by the Town.

Recognizing that there are currently no facilities to accommodate overnight guests in Moraga and recognizing that there is a need for overnight accommodations especially in conjunction with Saint Mary's College, the MCSP provides for the construction of a 10-room bed and breakfast facility and 75-room hotel. To best serve the local community, these lodging accommodations may be developed in combination with amenities such as a spa or winery project or other restaurant/entertainment use.

Aside from new development, two key components of the MCSP are the renovation of and expansion of infill uses within the Moraga Ranch – which shall include the "look and feel" of the historic Ranch building area adjacent to School Street -- and the preservation, enhancement and enjoyment of Laguna Creek. These elements will be partially facilitated through changes in circulation including the integration of the Lafayette-Moraga Regional Trail with the extension of School Street.

As shown in the illustrative land use and circulation plan (Figure 2-2), the MCSP area is bounded on all sides by residential development. Moraga Commons Park and Recreational Area is located to the east. Significant features within the plan area are the Moraga Center commercial complex and other retail and service facilities including

offices and financial institutions. The area is served by County Connection bus service with direct service to the Orinda Bart Station that is 4.8 miles from the MCSP area.

Table 2-1 provides a summary of baseline development proposed within the MCSP area.

**Table 2-1**

Development Potential Under the MCSP

Land Use Category	Quantified Development Objectives
Retail & Entertainment	90,000 square feet
Focused Office	50,000 square feet
Bed & Breakfast	10 rooms
Boutique Hotel	75 rooms
Congregate Care (20-40 /ac)	75 units
Assisted Living (20-40 /ac)	75 units
Active Senior (12-24 /ac)	300 housing units
Conventional Single Family (3-5 /ac)	20 housing units
Student/Faculty Housing (12-24 /ac)	50 housing units
Workforce Housing (12-24 /ac)	50 housing units
Compact Single Family (7-12 /ac)	300 housing units
<b><i>Housing Subtotal:</i></b>	<b><i>720 housing units</i></b>

---

Table 2-1 identifies the anticipated baseline mix of land uses within the Specific Plan. However, in order to maintain a flexible land use program that can adapt to changing market opportunities, while avoiding any increase in adverse traffic effects within neighboring communities, beyond that established through the Moraga 2002 General Plan EIR (as identified in Specific Plan Goal #5) a sliding scale of quantified residential land use categories has been presented in a MCSP Conceptual Land Use Matrix (see Table 2-2 below). The matrix provides for reassignment of permissible residential land use units, subject to a finding of conformity with the defined baseline of General Plan peak hour external traffic. As discussed in more detail in Chapter 4.F, Transportation, the General Plan baseline (analyzed as Alternative 2 in this EIR) reflects the sum of outbound AM peak hour external trips and inbound PM peak hour external trips associated with future development evaluated in the Moraga 2002 General Plan EIR. The matrix provides for increases, within defined maximum limits, of any quantified land use subject to a decrease in other uses, such that the total external traffic budget remains below the defined threshold.

Table 2-2

## MCSP Conceptual Land Use Matrix

Land Use	Minimum / Maximum Development	Proposed Project	Maximum SFH Development	Maximum SFH / SM Development	Maximum SFH / S Development	Maximum CT / SM Development	Trips per dwelling unit	Land Use Equivalents
Single-family homes (SFH)	20 / 60	20	60	60	60	20	10.6 / DU	20 SFH = 33 CT
Compact Residential Condo / Townhouse (CT)	100 / 300	300	235	135	100	300	6.4 / DU	1 C/T = 1 SM 10 CT = 17 S
St. Mary's Faculty/Staff/ Student (SM)	100 / 200	100	100	200	100	200	6.0 / DU	10 SM = 16 S
Senior Housing (S)	140 / 520	300	300	300	520	140	3.7 / DU	16 S = 10 SM
<b>Total Housing</b>	<b>360 / 780</b>	<b>720</b>	<b>695</b>	<b>695</b>	<b>780</b>	<b>660</b>		
Retail	90,000 SF	90,000 SF					29.7 / 1,000 SF	Given the desired diversity in the commercial environment – no land use equivalents are proposed
Office	50,000 SF	50,000 SF					16 / 1,000 SF	
Hotel/Bed-and Breakfast	85 rooms	85 rooms					8.2 / RM	
Congregate Care	75 units	75 units					2.0 / DU	
Assisted Living	75 units	75 units					2.7 / DU	

Source: Town of Moraga Planning, May 2008

Note: The Proposed Project identifies development potential within the Specific Plan area with respect to land use and number of units or square footage (SF). In order to achieve residential diversity within the Specific Plan area and respond to community needs and market forces, it is possible to construct alternate residential configurations as illustrated above without adversely impacting peak hour traffic. The above mix of residential units does not adversely affect peak hour traffic because consideration has been given in the land use equivalents to trip origin and destination. For example, single-family and compact residential condo/townhouse occupants are assigned a larger percentage of travel outside Moraga so those units can be exchanged for units that have fewer trips outside Moraga such as senior units and St. Mary's units but the senior and St. Mary's units cannot be exchanged for more single-family or compact residential units.

## 2.4 PROJECT ALTERNATIVES

This Draft EIR describes and analyzes four project alternatives as well as two alternatives for the location of a proposed community center. Consistent with the requirements of CEQA Guideline Section 15626.6, these alternatives have been developed for evaluation to determine their potential to minimize or avoid significant environmental effects, while achieving the primary purpose of the Proposed Project. The key elements of the four alternatives are summarized in Table 2-3 below and are:

Alternative 1: No Project (equivalent to existing conditions - no new buildings, dwelling units, land uses, or changes in existing land uses within the planning area that would result in additional traffic);

Alternative 2: General Plan Development Level Alternative (339 Residential Units) - the number of residential units is consistent with the assumptions analyzed in the Town of Moraga 2002 General Plan EIR. This includes 323 new low density single-family housing units originally assigned to the MCSP area defined in the General Plan plus 16 housing units associated with a parcel that has been added to the MCSP boundary, together with 16,000 square feet of additional retail uses, and 38,000 square feet of additional offices;

Alternative 3: 400 Residential Unit Alternative, with a range of housing types, along with 50,000 square feet each of office and retail, 50 rooms of hotel and/or B&B uses, and 60 units of congregate care and assisted living accommodations; and

Alternative 4: 560 Residential Unit Alternative, with a range of housing types, along with 90,000 square feet of retail, 50,000 square feet of office, 50 hotel rooms and 90 units of assisted living and congregate care accommodations.

### **2.4.1 Alternative 1. No Project (e.g., no new land uses, buildings, homes, or expansion/replacement of existing uses)**

Under the No Project Alternative (Alternative 1), no new development would occur and no existing uses would be replaced or intensified on the lands located within the MCSP boundary, including development envisioned under the 2002 General Plan. The No Project Alternative is included to provide baseline or existing conditions by which to compare the Proposed Project and Action Alternatives (Alternatives 2, 3 and 4).

**Table 2-3**

## MCSP Alternative Summary

	Proposed Project	Alternative 1: No Project	Alternative 2: GP Dev. Level	Alternative 3: 400 Unit	Alternative 4: 560 Unit
Senior Housing (20 du/ac)	240 (300) units	0 units	0 units	120 (150) units	184 (230) units
St. Mary's Faculty/Staff/Student Housing (12-20 du/ac)	80 (100) units	0 units	0 units	80 (100) units	80 (100) units
Compact Residential (10-12 du/ac)	300 units	0 units	0 units	100 units	165 units
Single-family homes (3-6 du/ac)	20 units	0 units	339 units	50 units	65 units
<b>Residential total</b>	<b>640 (720) units</b>	<b>0 units</b>	<b>339 units</b>	<b>350 (400) units</b>	<b>494 (560) units</b>
Retail	90,000 sf	0 sf	16,000 sf	50,000 sf	90,000 sf
Office	50,000 sf	0 sf	38,000 sf	50,000 sf	50,000 sf
Hotel/Bed-and-Breakfast	85 rooms	0 rooms	0 rooms	50 rooms	50 rooms
Congregate Care	75 rooms	0 rooms	0 rooms	20 rooms	30 rooms
Assisted Living	75 rooms	0 rooms	0 rooms	40 rooms	60 rooms

Note: Senior Housing and St. Mary's Faculty/Staff/Student Residential units are shown with and without "a density bonus." Density bonus units are available for residential development types that can provide housing units that are affordable to low and moderate income families. Density bonus is not available for single family and compact residential condo/townhouse housing designations. The number of units presented in parentheses () are the total possible including "density bonus units."

#### 2.4.2 Alternative 2. General Plan Development Level Alternative

Under the General Plan Development Level Alternative (Alternative 2), the number of new residential units would be consistent with that evaluated in the Moraga 2002 General Plan EIR. This alternative does not include the MCSP proposed Community Center because it was not specifically identified in the General Plan buildout for the MCSP area. Because this level of development was already analyzed and approved by the Town of Moraga, no new discretionary land use decisions would need to be taken by the Town. The maximum potential development "capacity" would be approximately 16,000 square feet of new community commercial space, 38,000 square feet of new suburban office space, and 339 conventional single-family housing units at varying densities (Table 2-3). The General Plan EIR assigned 323 residential units to the MCSP boundary identified in the Moraga 2002 General Plan. The MCSP being considered in this EIR includes an

additional parcel (and its associated 16 residential units) located east of Moraga Road across from the Moraga Center. Therefore, 339 housing units are being used for this alternative to be consistent with the levels of development that would have been used in the General Plan EIR had the additional parcel been included in the MCSP boundary. Due to the reduced number of dwelling units and associated population increase compared to the Proposed Project, Alternative 2 includes a reduced amount of new commercial and office space. Therefore, renovation and revitalization of the existing Moraga Shopping Center may still occur, but may not be as economically feasible as under the Proposed Project. As illustrated in Figure 2-3, intersection improvements would occur at Moraga Way and School Street, Moraga Road and School Street, and the proposed town square. In addition, a 2.5-acre recreation area would be located in the northeastern area of the project boundary and the Laguna Creek riparian corridor would be maintained and enhanced with a pedestrian/bike trail.

#### **2.4.3 Alternative 3. 400 Unit Alternative**

The 400 Unit Alternative (Alternative 3) is the minimum development required to meet the Town's fair share housing goals established by ABAG. Under Alternative 3, fewer total residential units would be developed than under the proposed MCSP shown on Table 2-3. This alternative decreases the number of housing units and retail space. Up to 50 single family homes would be built at 3 du/ac, up to 100 compact residential condominiums or townhouses would be built at 10-12 du/ac, and up to 100 Saint Mary's College faculty/student residential units would be built at up to 12-20 du/ac. In addition, this alternative includes up to 150 senior housing residences at up to 20 du/ac proposed for the central Village area and 60 congregate care/assisted living units. The medium to higher density units would be developed within walking distance of potential new and existing commercial and office space. Intersection improvements would occur at the intersections of Moraga Road and School Street and Moraga Way and School Street as well as at the proposed town square area shown on Figure 2-4. Alternative 3 would differ from the MCSP by minimizing the overall project development footprint.

#### **2.4.4 Alternative 4. 560 Unit Alternative**

The 560 Unit Alternative (Alternative 4) was developed to provide a midpoint between the Proposed Project and the minimum residential development needed to meet ABAG projections included in Alternative 3. In addition, Alternative 4 is included because it would reduce average residential densities to be more consistent with the existing rural character of the Town while still providing the mixed-use village center. Under Alternative 4, new residential development would be almost entirely medium to high-density housing clustered near existing and new commercial, retail, and office space. As shown on Table 2-3 and illustrated on Figure 2-5, a total of 560 residences would be provided under this alternative in addition to retail and office space, a hotel, congregate care and assisted living units. Although the total number of housing units, hotel rooms, and congregate care/assisted living units is less than the MCSP, the total allocated retail and office square footage, if feasible, would be identical. The goal of this alternative would be to use less undeveloped lands than the MCSP while still providing opportunities for a revitalized pedestrian-friendly downtown, enhancing retail

opportunities and meeting the Town's ABAG Fair Share housing allocation for affordable housing units. The 65 single-family residences would be located on the northwest portion of the project boundary and on lands located at the termination of Moraga Way, while 230 senior residential units at up to 20 du/ac would be located in the central Village area of the project site near Laguna Creek. Alternative 4 also includes up to 165 compact residential townhomes/condominiums at 10-12 du/ac on lands located between the lower density single-family housing and the higher density Senior Housing near Laguna Creek and up to 100 Saint Mary's College student/faculty residential units at up to 12-20 du/ac located within the mixed retail/residential zone near the existing Moraga Center. Intersection improvements would occur at the intersections of Moraga Road and School Street and Moraga Way and School Street as well as at the proposed town square area shown on Figure 2-5. Alternative 4 would differ from the MCSP by minimizing the overall project development footprint.

#### **2.4.5 Community Center Site Location Alternatives**

Two locations have been evaluated for a community center facility of up to 30,000 sf. An example of the facility layout for Site B is shown on Figure 2-6, Conceptual Community Center Layout. Site A is located adjacent to new retail development near the primary intersection of Moraga Road, St. Mary's Road, and School Street. It is privately owned and immediately adjacent to other lands planned for retail and mixed retail/residential development. Site B is located across from Moraga Commons on Moraga Road and would be connected to other portions of the planning area by a system of pathways. A portion of Site B is currently owned by the Town of Moraga.

#### **2.4.6 Comparison of Alternatives to the Stated Project Objectives**

As required pursuant to CEQA Guideline Section 15626.6, the foregoing alternatives have been evaluated in Chapter 5 of this DEIR in order to determine their effectiveness in minimizing or avoiding the environmental effects identified in Section 4, while serving to fulfill the primary purposes of the Specific Plan, including its economic feasibility. Table 2-4 provides a summary of the Alternatives Analysis. Table 5-1 compares the potential environmental impacts of the Proposed Project and Alternatives.



**Table 2-4**

## Comparison of Proposed Project and Alternatives with MCSP Goals

MCSP Goal	Proposed Project	No Project Alternative 1	Alternative 2 (339 DU)	Alternative 3 (400 DU)	Alternative 4 (560 DU)
1. Provides for the revitalization of the existing Moraga Center through increased residential development in and around the Center.	●	○	○	○	○
2. Provides for expansion of retail opportunities in the vicinity of the existing Moraga Center.	●	○	○	○	○
3. Provides for the creation of a mixed use Village that serves as an activity center for the community.	●	○	○	○	○
4. Establishes residential housing densities that are adequate to help meet the Town's fair-share of affordable housing goals.	●	○	○	○	○
5. Controls maximum peak hour traffic volumes at levels equal to or less than those predicted in the Town's General Plan EIR for the MCSP area.	○	●	●	●	○
6. Provides for a community center to address many community-wide needs for recreational facilities	●	○	○	●	●

Source: Hauge Brueck Associates and Town of Moraga

Key: ● Excellent ○ Good ○ Poor ○ NA

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 2-3: Alternative 2, General Plan Development Level (339 Units). (Color)**

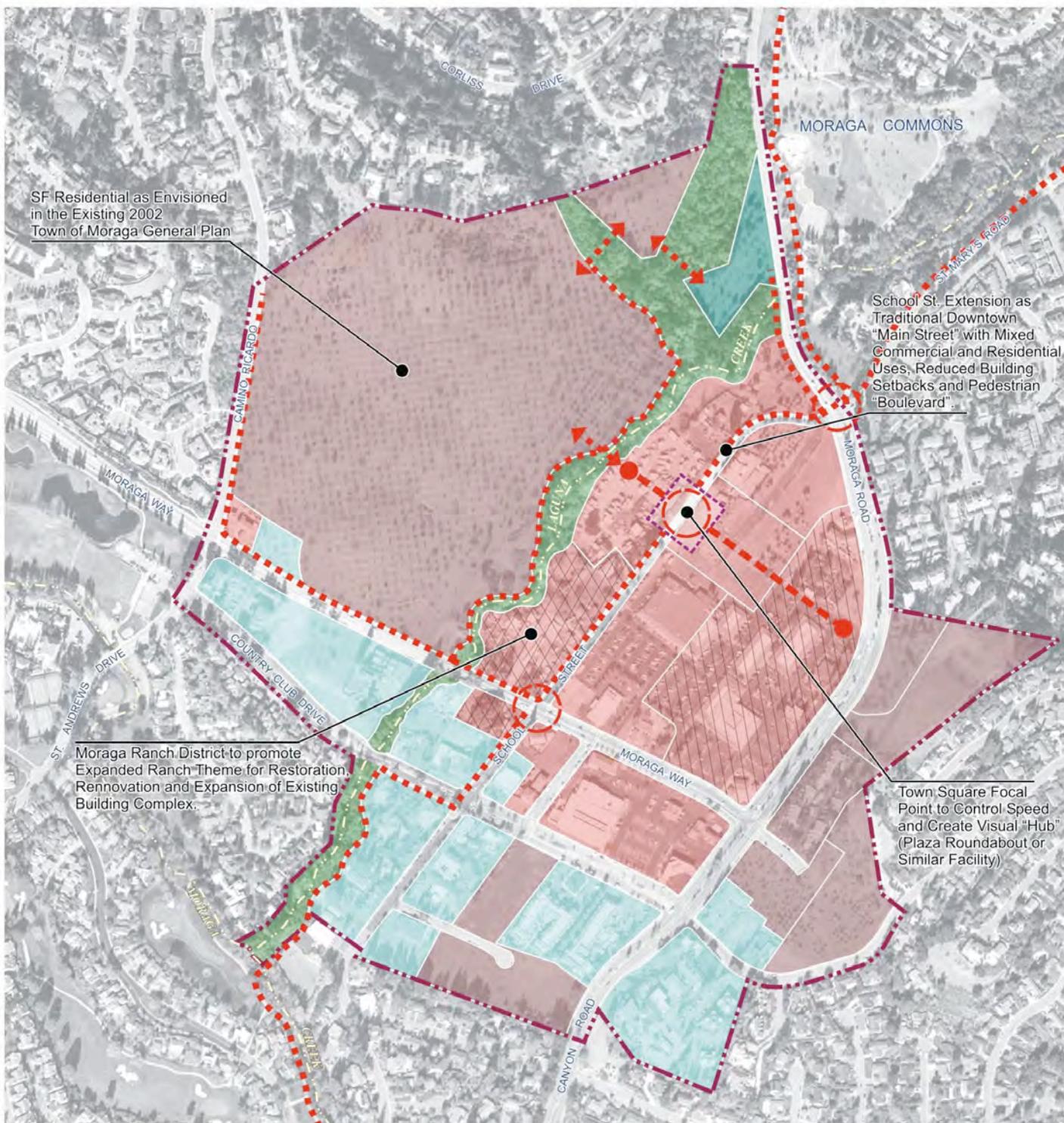
# MORAGA CENTER SPECIFIC PLAN

## GP Buildout Alternative (323 Units)

(05.05.08)



0' 100' 200' 300' 400' 500' 1000' 1500'



### LEGEND

- Community Commercial
- SF Residential (6 du/ac)
- Suburban Office
- Recreation/Public Service
- Riparian Corridor
- Area of Revitalization
- Moraga Ranch District
- Proposed Internal Circulation
- Existing or Proposed Pedestrian / Bike Trail
- Proposed Pedestrian Access
- Project Boundary
- Proposed Improved Street Intersection

Figure 2-3: Alternative 2

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 2-4: Alternative 3, 400 Unit Alternative. (Color)**

# MORAGA CENTER SPECIFIC PLAN

## 400 Unit Alternative

(05.29.08)



### LEGEND

Senior Residential (20 du/ac)
Residential (10-12 du/ac)
Residential (6 du/ac)
Residential (3 du/ac)
Mixed Retail / Residential (12-20 du/ac)
Mixed Office / Residential (12-20 du/ac)

Community Commercial
Recreation/Public Service
Riparian Corridor
Area of Revitalization
Moraga Ranch District

● - - - ●	Proposed Internal Circulation
- - - - -	Existing or Proposed Pedestrian / Bike Trail
◀ - - - ▶	Proposed Pedestrian Access
- - - - -	Project Boundary
○ ○ ○ ○ ○	Proposed Improved Street Intersection

Figure 2-4: Alternative 3

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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**MORAGA CENTER SPECIFIC PLAN**

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**Figure 2-5: Alternative 4, 560 Unit Alternative. (Color)**

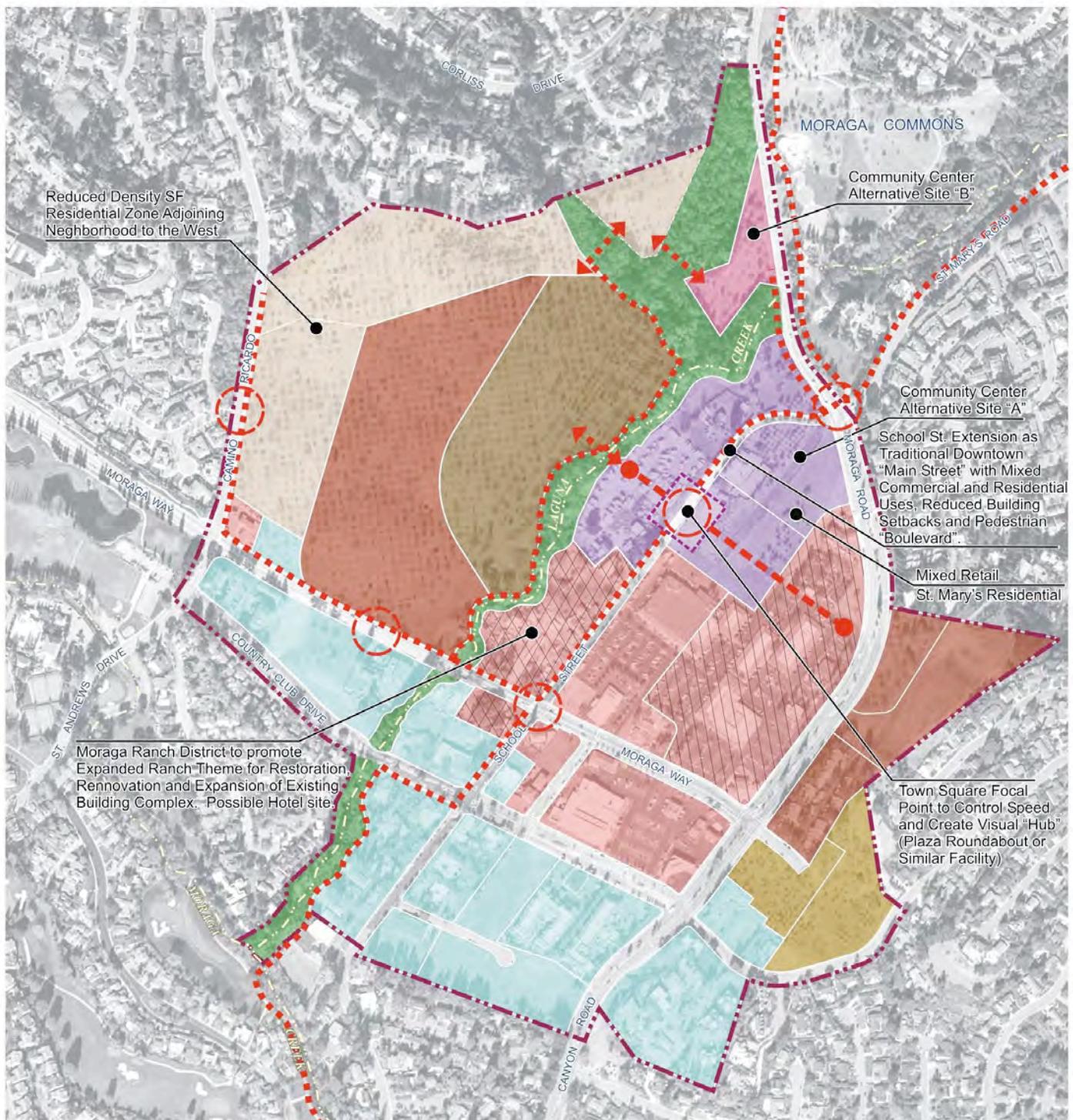
# MORAGA CENTER SPECIFIC PLAN

## 560 Unit Alternative

(05.29.08)



0' 100' 200' 300' 400' 500' 1000' 1500'



File: MCSP-560U-F2d.cdr Date: 05-29-2008 Aerial Photo: June 2005

### LEGEND

Senior Residential (20 du/ac)
Residential (10-12 du/ac)
Residential (6 du/ac)
Residential (3 du/ac)
Mixed Retail / Residential (12-20 du/ac)
Mixed Office / Residential (12-20 du/ac)

Community Commercial
Recreation/Public Service
Riparian Corridor
Area of Revitalization
Moraga Ranch District

Proposed Internal Circulation
Existing or Proposed Pedestrian / Bike Trail
Proposed Pedestrian Access
Project Boundary
Proposed Improved Street Intersection

Figure 2-5: Alternative 4

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 2-6: Conceptual Community Center Layout, Site B. (Black and White)**

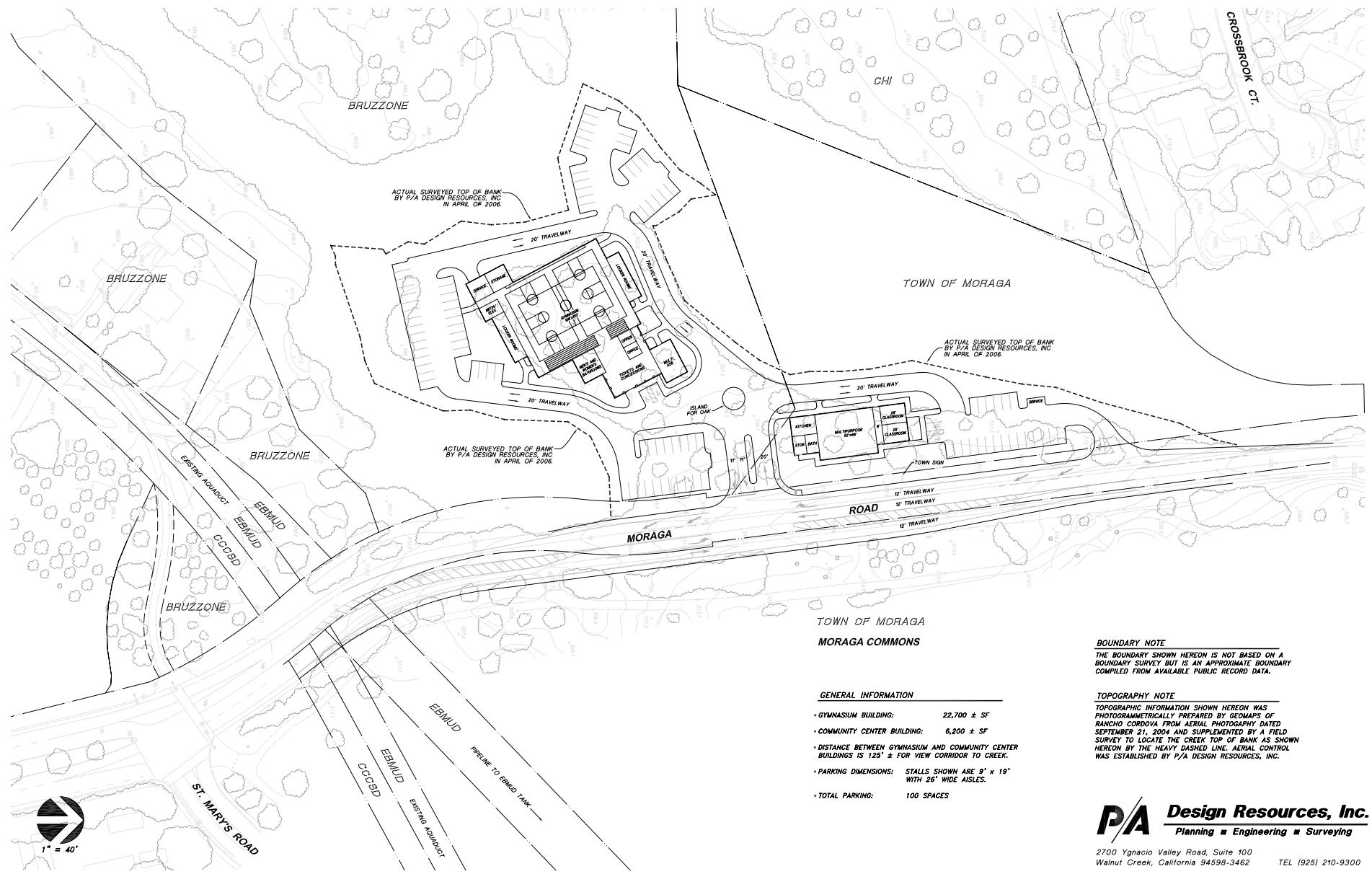
# MORAGA COMMUNITY CENTER

TOWN OF MORAGA, CALIFORNIA

# CONCEPTUAL SITE PLAN

FOR AREA 7

MAY 11, 2007



# 3 **SUMMARY OF FINDINGS**

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## **3.1 PROJECT DESCRIPTION SUMMARY**

The Moraga Center Specific Plan (MCSP) is a planning document for a 187-acre urban infill area in the Town of Moraga. The MCSP includes revitalization and renovation of the aging Moraga Shopping Center and Moraga Ranch, adding 90,000 square feet (sf) of new retail and entertainment space, including a 75-room hotel and up to 50,000 sf of new office space. The pedestrian-friendly commercial core of the MCSP will be supported by new residential development at various densities ranging from low (3-6 dwelling units per acre [du/ac]) to compact (10-12 du/ac) and high (12-24 du/ac). The Proposed Project will add 320 single-family residential units, 100 St. Mary's faculty/staff/student residential units, 300 active senior residential units and 150 congregate care/assisted living units. A 30,000 sf community center/gymnasium in the MCSP area will complement increased activity associated with new residences and address community-wide recreational needs.

Two other key components of the MCSP are the renovation of the Moraga Ranch – which shall include preservation of the “look and feel” of the historic Ranch building area adjacent to School Street -- and the preservation, enhancement and enjoyment of Laguna Creek.

## **3.2 IMPACT AND MITIGATION SUMMARY**

Table 3-1 provides a summary of the impacts and mitigation measures that are discussed in detail in Chapter 4. The impacts and mitigation measures are identified in one of four categories. Each category is identified with a symbol, which is provided below and at the end of Table 3-1 for clarification.

- Significant and Unavoidable – Impact is significant and cannot be mitigated to a less than significant level;
- Significant Before Mitigation – Impact is significant but can be mitigated to a less than significant level;
- Less than Significant – Impact is not considered significant and no mitigation is required; and

== No Impact.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
<b>4.A LAND USE</b>		
4.A-1. Is the Project consistent with the 2002 Town of Moraga General Plan adopted for the purpose of avoiding, minimizing, or monitoring environmental effects?	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> Alt. 1 (No Project)</li> <li><input type="radio"/> Proposed Project (720 units)</li> <li><input checked="" type="radio"/> Alt. 2 (339 units)</li> <li><input type="radio"/> Alt. 3 (400 units)</li> <li><input type="radio"/> Alt. 4 (560 units)</li> </ul>	4.A-1: Eliminate Inconsistency with the Moraga General Plan.
4.A-2. Will the Project result in conflicts between adjacent land uses (i.e., higher density versus lower density residential and residential versus retail/mixed use/office)?	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> Alt. 1 (No Project)</li> <li><input type="radio"/> Proposed Project (720 units)</li> <li><input type="radio"/> Alt. 2 (339 units)</li> <li><input type="radio"/> Alt. 3 (400 units)</li> <li><input type="radio"/> Alt. 4 (560 units)</li> </ul>	None.
4.A-3. Will the Project substantially increase densities?	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> Alt. 1 (No Project)</li> <li><input type="radio"/> Proposed Project (720 units)</li> <li><input checked="" type="radio"/> Alt. 2 (339 units)</li> <li><input type="radio"/> Alt. 3 (400 units)</li> <li><input type="radio"/> Alt. 4 (560 units)</li> </ul>	None.
4.A-4. Convert or result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or conflict with a Williamson Act contract	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> Alt. 1 (No Project)</li> <li><input checked="" type="radio"/> Proposed Project (720 units)</li> <li><input checked="" type="radio"/> Alt. 2 (339 units)</li> <li><input checked="" type="radio"/> Alt. 3 (400 units)</li> <li><input checked="" type="radio"/> Alt. 4 (560 units)</li> </ul>	None.
<b>4.B POPULATION, EMPLOYMENT AND HOUSING</b>		
4.B-1. Will the Project displace substantial numbers of existing dwelling units or people, particularly units occupied by low- or moderate-income households, requiring the construction of replacement housing elsewhere?	<ul style="list-style-type: none"> <li><input checked="" type="radio"/> Alt. 1 (No Project)</li> <li><input checked="" type="radio"/> Proposed Project (720 units)</li> <li><input checked="" type="radio"/> Alt. 2 (339 units)</li> <li><input checked="" type="radio"/> Alt. 3 (400 units)</li> <li><input checked="" type="radio"/> Alt. 4 (560 units)</li> </ul>	None.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.B-2. Will the Project create a demand for housing or induce population growth in excess of growth anticipated in the Moraga 2002 General Plan either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.B-3. Is the Project consistent with adopted goals and policies, related to population, employment, and housing.	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.B-3. Identify Alternative Sites to Meet Housing Goals (Alternative 1 and 2)

**4.C GEOLOGY, SOILS AND SEISMICITY**

4.C-1. Will the Project expose people or structures to major geologic hazards, such as strong seismic ground shaking, or seismic related ground failure?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.C-1. Implement Moraga General Plan Measure 4.I-1- Prepare geologic hazard evaluations and incorporate appropriate design measures into each development project. (Proposed Project and All Action Alternatives)
4.C-2. Will the Project result in damage caused by unstable slope conditions (e.g., landslides, lateral spreading, subsidence, liquefaction, collapse, or soil erosion)?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.C-2. Implement Moraga General Plan Measure 4.I-2- Prepare and Implement Slope Stability Assessments, Site Grading Plans and Landslide Mitigation Designs. (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.C-3. Will the Project be located on expansive or corrosive soil, creating substantial risks to life or property?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.C-3a. Prevent Moisture Variation of Expansive Soils. (Proposed Project and All Action Alternatives) 4.C-3b. Construct Appropriate Foundations for Expansive Soils (Proposed Project and All Action Alternatives) 4.C-3c. Construct Appropriate Foundations for Corrosive Soils (Proposed Project and All Action Alternatives)
4.C-4. Will the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	None.

**4.D HYDROLOGY, SURFACE WATER AND GROUNDWATER QUALITY**

4.D-1. Will the Project degrade surface water quality or violate any water quality standards or waste discharge requirements?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.D-1a Develop and Implement a Master Drainage Plan (Proposed Project and All Action Alternatives) 4.D-1b. Develop and Implement Laguna Creek Greenway Protection, Maintenance and Monitoring Program (Proposed Project and All Action Alternatives)
4.D-2. Will the Project substantially deplete groundwater supplies or interfere with groundwater recharge?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.D-2a. Demonstrate that existing springs and seeps are not dependent on the recharge from the project area. (Proposed Project and All Action Alternatives) 4.D-2b. Capture and Infiltrate Runoff (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.D-3. Will the Project substantially alter existing drainage patterns resulting in substantial erosion, sedimentation, or flooding in new areas, or alter storm runoff such that storm drainage capacity would be exceeded?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.D-3. Determine Peak Flows due to Development and Reduce Peak Flows to Below Pre-Project Conditions (Proposed Project and All Action Alternatives)
4.D-4. Will the Project expose people or structures to inundation by seiche, tsunami, or mudflow?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.D-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	None.
4.D-6. Will the Project place structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.D-7. Will the Project expose people or structures to increased potential for flooding, bank erosion and/or sedimentation?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	4.D-1b. Develop and Implement Laguna Creek Greenway Protection, Maintenance and Monitoring Program (Proposed Project and All Action Alternatives) 4.D-3. Determine Peak Flows due to Development and Reduce Peak Flows to Below Pre-Project Conditions (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.D-8. Will construction of the Project result in degradation of surface water quality?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ⊗ Proposed Project (720 units) <input type="radio"/> ⊗ Alt. 2 (339 units) <input type="radio"/> ⊗ Alt. 3 (400 units) <input type="radio"/> ⊗ Alt. 4 (560 units)	4.D-8: Implement water quality standards and best management practices. (Proposed Project and All Action Alternatives)

**4.E OPEN SPACE, VISUAL RESOURCES AND RECREATION**

4.E-1. Will the Project result in loss of potential public open space?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ⊗ Proposed Project (720 units) <input type="radio"/> ⊗ Alt. 2 (339 units) <input type="radio"/> ⊗ Alt. 3 (400 units) <input type="radio"/> ⊗ Alt. 4 (560 units)	None.
4.E-2. Will the Project have a substantial adverse effect on a scenic vista or substantially damage scenic resources (e.g., natural landforms, trees, rock outcrops and historic buildings along a scenic highway)?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ⊗ Proposed Project (720 units) <input type="radio"/> ⊗ Alt. 2 (339 units) <input type="radio"/> ⊗ Alt. 3 (400 units) <input type="radio"/> ⊗ Alt. 4 (560 units)	4.E-2a. Develop and Implement Additional MCSP Design Guidelines (Proposed Project and All Action Alternatives) 4.E-2b. Require Internal View Corridors (Proposed Project and All Action Alternatives)
4.E-3. Will the Project substantially degrade the existing visual quality of the site and its surroundings?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ⊗ Proposed Project (720 units) <input type="radio"/> ⊗ Alt. 2 (339 units) <input type="radio"/> ⊗ Alt. 3 (400 units) <input type="radio"/> ⊗ Alt. 4 (560 units)	4.E-2a. Develop and Implement Additional MCSP Design Guidelines (Proposed Project and All Action Alternatives) 4.E-2b. Require Internal View Corridors (Proposed Project and All Action Alternatives)
4.E-4. Will the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ⊗ Proposed Project (720 units) <input type="radio"/> ⊗ Alt. 2 (339 units) <input type="radio"/> ⊗ Alt. 3 (400 units) <input type="radio"/> ⊗ Alt. 4 (560 units)	4.E-4. Light and Glare Minimization (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.E-5. Will the Project create additional demand for recreation facilities such that new facilities need to be constructed to maintain the existing level of service?	<input type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
<b>4.F TRANSPORTATION, CIRCULATION AND PARKING</b>		
4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	None.
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.F-3: Install a traffic signal with the current lane configuration at the Corliss Drive/Moraga Way intersection (Proposed Project and All Action Alternatives)
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ○ Proposed Project (720 units) <input checked="" type="radio"/> ○ Alt. 2 (339 units) <input checked="" type="radio"/> ○ Alt. 3 (400 units) <input checked="" type="radio"/> ○ Alt. 4 (560 units)	4.F-5: Install traffic signals at the following Lafayette intersections: Deer Hill Drive/Oak Hill Road (with the current lane configuration), Glenside Drive/Reliez Station Road (widen Glenside Drive for a left turn pocket), Glenside Drive/Burton Drive (widen Glenside Drive for a left turn pocket), and Pleasant Hill Road/Olympic Boulevard (with the current lane configuration) (Proposed Project and All Action Alternatives)
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ● Proposed Project (720 units) <input checked="" type="radio"/> ● Alt. 2 (339 units) <input checked="" type="radio"/> ● Alt. 3 (400 units) <input checked="" type="radio"/> ● Alt. 4 (560 units)	4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program (Proposed Project and All Action Alternatives)
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ○ Proposed Project (720 units) <input checked="" type="radio"/> ○ Alt. 2 (339 units) <input checked="" type="radio"/> ○ Alt. 3 (400 units) <input checked="" type="radio"/> ○ Alt. 4 (560 units)	None.
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ○ Proposed Project (720 units) <input checked="" type="radio"/> ○ Alt. 2 (339 units) <input checked="" type="radio"/> ○ Alt. 3 (400 units) <input checked="" type="radio"/> ○ Alt. 4 (560 units)	None.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.F-9: Ensure Adequate Internal Circulation within the MCSP (Proposed Project and All Action Alternatives)
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.F-10a: Reduce Potential Vehicular Conflicts with Bicycles and Pedestrian Travel Ways (Proposed Project and All Action Alternatives) 4.F-10b: Provide an enhanced pedestrian crossing on Moraga Road between the community center Site "B" and the Moraga Commons (Proposed Project and Alternatives 3 and 4)
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.F-11: Provide Adequate Parking Supplies (Proposed Project and All Action Alternatives)

**4.G AIR QUALITY**

4.G-1. Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.G-1: Implement measures to reduce dust generation and diesel exhaust during construction periods (Proposed Project and All Action Alternatives)
4.G-2. Will the Project conflict with or obstruct implementation of the applicable Clean Air Plan?	<input checked="" type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.G-3. Is the Project consistent with the Clean Air Plan population and Vehicle Miles Traveled (VMT) assumptions and Transportation Control Plans (TCMs)?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.G-4. Will the Project result in a substantial net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ● Proposed Project (720 units) <input checked="" type="radio"/> ● Alt. 2 (339 units) <input checked="" type="radio"/> ● Alt. 3 (400 units) <input checked="" type="radio"/> ● Alt. 4 (560 units)	4.G-4. Implement Measures to reduce energy consumption from mobile, stationary and area sources (Proposed Project and All Action Alternatives)
4.G-5. Will the Project result in a significant impact to local air quality?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ● Proposed Project (720 units) <input checked="" type="radio"/> ● Alt. 2 (339 units) <input checked="" type="radio"/> ● Alt. 3 (400 units) <input checked="" type="radio"/> ● Alt. 4 (560 units)	Implement Transportation Measures 4.F-3, 4.F-4, 4.F-5, and 4.F-11 to Reduce Traffic Volumes and Vehicle Delay (Proposed Project and All Action Alternatives)
4.G-6. Does the Project provide buffer zones around existing and proposed land uses that emit odors and/or toxic air contaminants?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.G-7. Will the project result in substantial greenhouse gas emissions and/or substantially contribute to global warming?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ● Proposed Project (720 units) <input checked="" type="radio"/> ● Alt. 2 (339 units) <input checked="" type="radio"/> ● Alt. 3 (400 units) <input checked="" type="radio"/> ● Alt. 4 (560 units)	4.G-7 Implement the air pollution reduction measures identified in Table 4.G-7 and Mitigation Measure 4.G-4 (Proposed Project and Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
<b>4.H NOISE</b>		
4.H-1. Will operation of the Project expose people to high noise levels or ground-borne vibration?	<input type="checkbox"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.H-2. Will Project construction expose people to high noise levels or ground borne vibration?	<input type="checkbox"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.H-2. Implement Noise Control Measures during Construction Phase (Proposed Project and All Action Alternatives)
4.H-3. Will Project traffic result in traffic noise level increases at existing land uses in the project area?	<input type="checkbox"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.H-4. Will Project traffic result in traffic noise levels at proposed land uses which will exceed the acceptable exterior noise level standards?	<input type="checkbox"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.H-4. Implement Noise Control Measures when Reviewing New Residential Projects (Proposed Project and All Action Alternatives)
4.H-5. Will the Development of Commercial, Retail and Office Uses Result in Noise Sources which Impact Existing and Future Noise-Sensitive Uses in the Project Area?	<input type="checkbox"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	4.H-5. Implement Noise Control Measures when Reviewing New Commercial or Office Projects (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
<b>4.I BIOLOGICAL RESOURCES</b>		
4.I-1. Will the Project cause a loss of individuals or habitat of endangered, threatened, or rare wildlife species?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ◎ Proposed Project (720 units) <input type="radio"/> ◎ Alt. 2 (339 units) <input type="radio"/> ◎ Alt. 3 (400 units) <input type="radio"/> ◎ Alt. 4 (560 units)	4.I-1: Implement General Plan EIR Mitigation 4.H-1: Site specific surveys and consultation with CDFG and USFWS. (Proposed Project and All Action Alternatives)
4.I-2. Will the Project cause a loss of rare plant species?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ◎ Proposed Project (720 units) <input type="radio"/> ◎ Alt. 2 (339 units) <input type="radio"/> ◎ Alt. 3 (400 units) <input type="radio"/> ◎ Alt. 4 (560 units)	4.I-1: Implement General Plan EIR Mitigation 4.H-1: Site specific surveys and consultation with CDFG and USFWS (Proposed Project and All Action Alternatives)
4.I-3. Will the Project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ◎ Proposed Project (720 units) <input type="radio"/> ◎ Alt. 2 (339 units) <input type="radio"/> ◎ Alt. 3 (400 units) <input type="radio"/> ◎ Alt. 4 (560 units)	4.I-3: Implement General Plan Mitigation: 4.H-3: Conduct Pre-construction surveys for breeding raptors and migratory birds. (Proposed Project and All Action Alternatives)
4.I-4. Will the Project cause a permanent loss of natural vegetation or habitat for sensitive wildlife species?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ◎ Proposed Project (720 units) <input type="radio"/> ◎ Alt. 2 (339 units) <input type="radio"/> ◎ Alt. 3 (400 units) <input type="radio"/> ◎ Alt. 4 (560 units)	4.I-3: Implement General Plan Mitigation: 4.H-3: Conduct Pre-construction surveys for breeding raptors and migratory birds. (Proposed Project and All Action Alternatives)
4.I-5. Will the Project cause a permanent loss of sensitive native plant communities?	<input type="radio"/> == Alt. 1 (No Project) <input checked="" type="radio"/> ◎ Proposed Project (720 units) <input type="radio"/> ◎ Alt. 2 (339 units) <input type="radio"/> ◎ Alt. 3 (400 units) <input type="radio"/> ◎ Alt. 4 (560 units)	None.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.I-6. Will the Project result in a substantial loss of native vegetation or wildlife populations?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.I-7. Will the Project substantially block or disrupt wildlife migration or travel corridors?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.I-8 Will the Project conflict with local policies or ordinances for the protection of biological resources?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.
4.I-9. Will the Project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	None.
4.I-10. Will the Project result in a net loss of wetlands, streams or other waters of the U.S.?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project (720 units) <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.I-10. Implement General Plan EIR Mitigation Measure 4.H-9: Protect Wetlands and Other Waters of the United States. (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
<b>4.J PUBLIC UTILITIES AND HAZARDOUS MATERIALS</b>		
4.J-1. Will the Project increase demand for water, wastewater treatment and disposal, solid waste or hazardous waste disposal that accepted service standards are not maintained and/or new facilities are required to maintain acceptable service standards?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.J-2. Will the Project create a significant hazard to the public or the environment through the routine transport, use, disposal of, or reasonably foreseeable upset and accidental release of hazardous materials?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.J-3. Will the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within $\frac{1}{4}$ - mile of an existing or proposed school?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> ○ Proposed Project (720 units) <input type="radio"/> ○ Alt. 2 (339 units) <input type="radio"/> ○ Alt. 3 (400 units) <input type="radio"/> ○ Alt. 4 (560 units)	None.
4.J-4. Will the Project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5, and, as a result, would it create a significant hazard to the public or the environment?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> == Proposed Project (720 units) <input type="radio"/> == Alt. 2 (339 units) <input type="radio"/> == Alt. 3 (400 units) <input type="radio"/> == Alt. 4 (560 units)	None.
4.J-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	<input type="radio"/> == Alt. 1 (No Project) <input type="radio"/> == Proposed Project (720 units) <input type="radio"/> == Alt. 2 (339 units) <input type="radio"/> == Alt. 3 (400 units) <input type="radio"/> == Alt. 4 (560 units)	None.

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
<b>4.K SCHOOLS</b>		
4.K-1. Will the Project increase demand for schools or libraries to such a degree that accepted service standards are not maintained and new facilities are required?	<input checked="" type="checkbox"/> == Alt. 1 (No Project) <input type="checkbox"/> ⊗ Proposed Project (720 units) <input type="checkbox"/> ⊗ Alt. 2 (339 units) <input type="checkbox"/> ⊗ Alt. 3 (400 units) <input type="checkbox"/> ⊗ Alt. 4 (560 units)	4.K-1a: Implement General Plan EIR Mitigation 4.L-1: Development Impact Fees (Proposed Project and All Action Alternatives)  4.K-1b: Pay school impact fee at issuance of building permit and schedule residential development. (Proposed Project and All Action Alternatives)
4.K-2. Will the Project conflict with local policies for providing public school facilities?	<input checked="" type="checkbox"/> == Alt. 1 (No Project) <input type="checkbox"/> ⊗ Proposed Project (720 units) <input type="checkbox"/> ⊗ Alt. 2 (339 units) <input type="checkbox"/> ⊗ Alt. 3 (400 units) <input type="checkbox"/> ⊗ Alt. 4 (560 units)	None.
<b>4.L PUBLIC SERVICES</b>		
4.L-1. Will the Project increase demand for public services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:		
a. Police protection?	<input checked="" type="checkbox"/> == Alt. 1 (No Project) <input type="checkbox"/> ⊗ Proposed Project (720 units) <input type="checkbox"/> ⊗ Alt. 2 (339 units) <input type="checkbox"/> ⊗ Alt. 3 (400 units) <input type="checkbox"/> ⊗ Alt. 4 (560 units)	4.K-1a: Fee Payment to the Town of Moraga for increased Police Protection Services. (Proposed Project and All Action Alternatives)
b. Fire protection?	<input checked="" type="checkbox"/> == Alt. 1 (No Project) <input type="checkbox"/> ⊗ Proposed Project (720 units) <input type="checkbox"/> ⊗ Alt. 2 (339 units) <input type="checkbox"/> ⊗ Alt. 3 (400 units) <input type="checkbox"/> ⊗ Alt. 4 (560 units)	4.K-1b: Fire Protection Plan (Proposed Project and All Action Alternatives)

**Table 3-1**

## Summary of Potential Effects and Required Mitigation Measures

Potential Effects	Level of Significance after Mitigation	Required Mitigation Measures
4.L-2. Will the Project impair or physically interfere with an adopted emergency response or evacuation plan?	<input checked="" type="radio"/> Alt. 1 (No Project) <input type="radio"/> Proposed Project (720 units) <input type="radio"/> Alt. 2 (339 units) <input type="radio"/> Alt. 3 (400 units) <input type="radio"/> Alt. 4 (560 units)	None.

**4.M CULTURAL RESOURCES**

4.M-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA § 15064.5?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.M-1: Protect Potential Historic Resources (Proposed Project and All Action Alternatives)
4.M-2. Will the Project cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA § 15064.5?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.M-2. Protect Potential Archaeological Resources (Proposed Project and All Action Alternatives)
4.M-3. Will the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.M-3. Protect Undiscovered Paleontological Materials (Proposed Project and All Action Alternatives)
4.M-4. Will the Project disturb any human remains, including those interred outside of formal cemeteries?	<input checked="" type="radio"/> Alt. 1 (No Project) <input checked="" type="radio"/> Proposed Project <input checked="" type="radio"/> Alt. 2 (339 units) <input checked="" type="radio"/> Alt. 3 (400 units) <input checked="" type="radio"/> Alt. 4 (560 units)	4.M-2. Protect Potential Archaeological Resources (Proposed Project and All Action Alternatives)

## Key Level of Significance:

- Significant impact before and after mitigation
- Significant impact before mitigation; less than significant impact after mitigation
- Less than significant impact; no mitigation proposed
- == No impact

### 3.3 AREAS OF CONTROVERSY OR EXPRESSED CONCERN

The CEQA Guidelines (Section 15123[b][2]) require the summary section of an EIR to identify areas of controversy or expressed concern known to the Lead Agency, including issues raised by agencies and the public. Issues of concern raised by regional and local agencies and the public were identified through written responses received on the Notices of Preparation (NOP). The NOP and letters of comment received on the NOP are provided in Appendices A and B. Areas of concern that were raised about the project include:

- Increased traffic congestion
- Overcrowded schools
- Degradation of the Town's visual character
- Loss of wildlife habitat
- Overburdened public safety services
- Incompatibility of high-density housing

### 3.4 ALTERNATIVES SUMMARY

CEQA requires that an EIR identify alternatives to a project as proposed. The CEQA Guidelines specify that the EIR identify alternatives that could attain most of the project objectives but might avoid or reduce significant affects of the project. In addition, the EIR must analyze a No Project Alternative that assesses the environmental effects in the event that the project does not occur. This EIR compares the proposed Moraga Center Specific Plan (Proposed Project) to the following alternatives:

- Alternative 1- No Project
- Alternative 2- 339 Residential Unit Alternative (General Plan Development Level);
- Alternative 3- 400 Residential Unit Alternative; and
- Alternative 4- 560 Residential Unit Alternative.

In addition, two sites have been identified and analyzed for the proposed Community Center as discussed in Chapter 2. Table 5-1 in Chapter 5 compares the potential environmental impacts of the Proposed Project and Alternatives.

## 4.A LAND USE

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This section addresses the land use constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. The setting section provides information on the physical characteristics and current land use direction for the MCSP area.

### 4.A-1 ENVIRONMENTAL SETTING

#### Jurisdiction in the Moraga Center Specific Plan Area

The Moraga Center Specific Plan area falls entirely within the limits of the Town of Moraga. Other government agencies with jurisdiction in the plan area include:

- State of California Regional Water Quality Board, which reviews and regulates activities that affect water quality in California;
- State of California Department of Fish and Game, which reviews projects affecting fish and wildlife habitat; and
- Department of the Army - Corps of Engineers which regulates activities and development in the navigable waters of the United States.

#### Existing Land Use

As shown in Figure 2-1, the Specific Plan area lies in the southwestern part of the central, mostly urbanized corridor of the Town approximately 1.8 miles from the other commercial area in town, the Rheeem Park area; both are located on Moraga Road, the primary arterial serving the community. The Town of Moraga may be characterized as a predominantly low-density residential community - the Moraga Center accommodates a majority of the retail, commercial, and office development within the Town. The MCSP is designated as a "Moraga Center Specific Plan Area" in the Moraga 2002 General Plan. This area was originally identified in Appendix B to the General Plan as consisting of several distinct opportunity sites, including the existing shopping center, under-utilized lands with a potential for higher density housing and commercial development, the alignment for possible extension of School Street, the Proposed Town Center Facility Site (across from the Moraga Commons Park), Laguna Creek and the Moraga Ranch site, the former orchard area where mixed density housing was anticipated, a lower density transitional housing density site, commercial and office areas, and a "limited commercial" area where housing infill was anticipated. The current Zoning for the MCSP area is Community Commercial, which permits development of a wide range of retail and service uses, subject to review by the Town, Suburban Office, and Residential (3 to 6 du/ac).

The Moraga Ranch, (a portion of area 5 on General Plan Appendix B) consists of a series of older and more recently constructed and/or renovated buildings fronting onto School Street northwest of Moraga Way. Existing buildings include barns, offices, housing accommodations, and other commercial and agricultural structures including a small café and contractor's offices. The existing shopping center has about 220,000 square feet of existing buildings on approximately 32 acres of land. Additional office and residential uses adjoin the existing shopping center. In all, there are about 600,000 square feet of buildings and facilities on 183 acres with about 1,500 parking spaces. The largest residential land use is the senior housing area which contains about 157 units; there is also a small multifamily complex comprising about 25 dwelling units and a few single family homes in the area.

There are no dedicated parks in the SP area, although one of Moraga's two parks, the Moraga Commons, is located just outside the northeastern boundary of the MCSP area. The Moraga Commons offers a variety of passive and active recreation areas and is the site of seasonal outdoor performances.

The MCSP area includes a segment of the Lafayette-Moraga Regional Trail, which is a part of the East Bay Regional Park District facilities. The trail winds from north to south, beginning at the Olympic Blvd. trail staging point in Lafayette and ending to the south at the Valle Vista Trail staging point that is managed by the EBMUD. Following St. Mary's Road and passing along the Moraga Commons Park, which is located just outside the northern boundary of the MCSP area, the trail then roughly follows the ROW and street corridor of School Street; there are no trail markers in this area, nor any other improvements of a recreational nature. Just north of the intersection of School Street and Moraga Way the trail resumes an improved designated path, winding to the south alongside Laguna Creek.

The Town of Moraga owns an undeveloped parcel of land of about 3.3 acres which is located in the northeastern corner of the MCSP area which faces onto Moraga Road; there is a signboard on the property, visible to drivers and pedestrians using Moraga Road, which is periodically changed to announce community events or matters of community interest. This Town-owned property adjoins other privately owned parcels which together are identified in General Plan Appendix B as the site of a Proposed Town Center Facility.

Approximately 91 acres of the MCSP area is fully developed, while the balance of the land is currently used for parking, commercial storage, shopping center operations, and agricultural purposes. As shown in Figure 2-2, the under-developed parcels are located in several large blocks, the largest of which is in the northern corner of the MCSP area. These parcels are indicated with darker shading. The other parcels are, for the most part, distributed around the perimeter of the area.

## Existing Market Conditions

As part of the MCSP process, and in order to gain an appreciation of the potential markets for the various land uses which have been identified in the General Plan and

through interaction with property owners and residents as being desirable for development within the MCSP area a market study was undertaken by the Town. The full study is provided as an Appendix in the MCSP, entitled “Town of Moraga Market Assessment”, EPS, February 2006. The findings and recommendations of this study are summarized in the following paragraphs.

- Households in Moraga may be characterized as increasingly well-to-do with growth in the number of households and incomes projected to take place over the next ten years; the 2005 mean household income was \$160,200 which is projected to increase to \$178,900 by the year 2015.
- Residential uses present the strongest development opportunities for the Moraga Center in the near term.
- Moraga households make 75% of their retail purchases in surrounding communities – as opposed to within the Town – which is consistent with the existing range of shopping opportunities available to residents. In terms of actual expenditures, Moraga’s households spend \$289 million on retail goods every year, but only \$70 million in taxable sales were made in the Town in 2004; a portion of those sales were made to shoppers from Orinda and Lafayette. The remaining \$219 million in retail sales made annually by Moraga’s households, which may be characterized as a “leakage” of sales, are made in surrounding communities.
- The combination of capturing a portion of existing “leakage” and the demand from new residents in Moraga create opportunities for an expansion of retail space.
- New retail development in Moraga will be focused in the existing commercial centers, Moraga Shopping Center and Rheem Valley Shopping Center.
- A small boutique hotel or bed-and-breakfast inn may be an option for Moraga.
- Office users are a relatively minor source of support for new development in Moraga.
- Entertainment development such as a sports bar and restaurant present a strong opportunity for development in the Moraga Center and Rheem Park areas.

## 4.A-2 REGULATORY SETTING

### Town of Moraga Goals, Objectives and Policies

The Town of Moraga's General Plan provides a comprehensive statement of the objectives and policies which the community is seeking to achieve on a community-wide basis with respect to land use, growth management, community design, transportation, open space, parks and public facilities, environmental conservation, health and safety, noise, and housing. The proposed Moraga Center Specific Plan, is intended to implement

the primary goals and policies of the General Plan., The Moraga 2002 General Plan has numerous goals, objectives and policies addressing land use. The applicable goals, objectives and policies are listed in Impact 4.A-1, along with brief comments about the extent to which the MCSP is responsive to and consistent with the intent of these goals and policies.

## Evaluation Criteria

Table 4.A-1 presents criteria for analysis of land use impacts.

**Table 4.A-1**

### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.A-1. Is the Project consistent with the Town of Moraga 2002 General Plan adopted for the purpose of avoiding, minimizing, or monitoring environmental effects?	Consistencies with General Plan policies	Greater than 0 conflicts with General Plan policies	ABAG Fair Share Housing Allocations; Moraga General Plan Land Use and Zoning; CEQA Checklist IX(b)
4.A-2. Will the Project result in conflicts between adjacent land uses (i.e., higher density versus lower density residential and residential versus retail/mixed use/office)?	Lineal feet of incompatible uses; or number of housing units of incompatible use	Greater than 0 incompatible lineal feet or 0 housing units	Moraga General Plan Land Use and Zoning
4.A-3. Will the Project substantially increase densities?	Dwelling units per acre	An increase in dwelling unit density beyond that allowed under existing zoning or policy	Moraga General Plan Policies LU1.2, 1.4-1.6(e).
4.A-4. Convert or result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or conflict with a Williamson Act contract	Acres of Prime or Unique Farmland lost; Number of Williamson Act contract conflicts	Net loss of Prime or Unique Farmland; Greater than 0 Williamson Act contract conflicts	CEQA Checklist II(a-c); CA FMMP; Williamson Act

## 4.A-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.A-2 presents potential land use impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for the Proposed Specific Plan Project, and each of the Alternatives identified for evaluation purposes herein. The potential for land use conflicts is determined by the types of existing land uses and regional and general plan land use policies. Consistency with the existing rural Moraga character is the primary land use concern for all the Alternatives.

**Table 4.A-2**

### Land Use Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.A-1. Is the Project consistent with the 2002 Town of Moraga General Plan adopted for the purpose of avoiding, minimizing, or monitoring environmental effects?	Greater than 0 conflicts with General Plan policies	P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) ● Alternative 2 (339 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.A-2. Will the Project result in conflicts between adjacent land uses (i.e., higher density versus lower density residential and residential versus retail/mixed use/office)?	Greater than 0 incompatible lineal feet or 0 housing units	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.A-3. Will the Project substantially increase densities?	An increase in dwelling unit density beyond that allowed under existing zoning or policy	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.A-4. Convert or result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or conflict with a Williamson Act contract	Net loss of Prime or Unique Farmland; Greater than 0 Williamson Act contract conflicts	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==

## MORAGA CENTER SPECIFIC PLAN

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Source: HBA 2008

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Notes:	1. Type of Impact:	2. Level of Significance:
C	Construction	● Significant impact before and after mitigation
P	Permanent	○ Significant impact before mitigation; less than significant impact after mitigation
		○ Less than significant impact; no mitigation proposed
		== No impact

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**Impact:** **4.A-1. Is the Project consistent with the 2002 Town of Moraga General Plan adopted for the purpose of avoiding, minimizing, or monitoring environmental effects?**

**Analysis:** *Significant Impact; Alternative 1 (No Project)*

Under the No Project Alternative, no new development would occur. Therefore, there would be no new physical effects under the No Project alternative. However, as such, there would also be no expansion or improvements of existing Town services, commercial areas, housing supply or recreational amenities. Several General Plan goals and policies call for the provision of more housing types and densities and improved services. Therefore, the No Project Alternative would not be consistent with the Moraga General Plan.

**Analysis:** *Potentially Significant; Proposed Project and All Action Alternatives*

The following table documents the Proposed Project and Action Alternative's consistency with General Plan goals and policies. As shown in the Table 4.A-3, there are several inconsistencies with General Plan policies that would either require modification to the Proposed Project and Alternatives, or a General Plan amendment.

**Table 4.A-3**

### Moraga General Plan Consistency Analysis with Proposed Project and Alternatives

General Plan Goals and Policies	Consistency Analysis
<b>Land Use</b>	
<b>LU1.2 Residential Densities</b> Restrict residential densities to the maximum allowable indicated on the General Plan Diagram and in the table on page 3-1 of the General Plan.	Not Consistent: Proposed Project and Alternatives 3 (400 units) and 4 (560 units). While the Proposed Project and Alternatives 3 and 4 provide land uses for sufficient multi-family and high-density housing units to meet the Town's current "fair share" allocations for very low, low, and moderate income households, the proposed densities exceed the designations identified in the General Plan. The densities proposed in the MCSP (10-12 and 20 DUA) have been used to allow for more clustered development near the MCSP center and to better meet regional housing goals for affordable housing units.

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General Plan Goals and Policies	Consistency Analysis
	<u>Not Consistent:</u> Alternative 2 (339 units). Alternative 2 provides land uses for only low density, single-family homes affordable to above moderate-income households, and so will not address the Town's "fair share" affordable housing allocations.
<b>LU3.1 Moraga Center Area Specific Plan (MCSP)</b>	
Undertake a specific planning process for the area designated on the General Plan Diagram as the 'Moraga Center Area Specific Plan,' coordinated as appropriate with the planning for the Rheem Park Area Specific Plan. Address the following issues through the specific plan process:	<u>Consistent:</u> The Town has undertaken the preparation of the MCSP, the subject of this document. The Rheem Park Area Specific Plan will be prepared as a separate planning study.
a) <i>Vision.</i> Define a long-term vision for the area's development and redevelopment as a community focal point and activity center, defining specifically the area's role within the larger structure of the Town and its relation to the Rheem Park Specific Plan Area	<u>Consistent:</u> The MCSP document provides information concerning the vision for the area's development and redevelopment in Section C - Land Use Element and Section D - Circulation Element. The Rheem Park Specific Plan area is discussed to provide context for the larger Town planning area.
b) <i>Mix of Uses.</i> Establish an appropriate mix of residential and commercial use areas in addition to community facilities and open space areas. Focus in particular on those parcels that are undeveloped, under-utilized, or subject to potential redevelopment.	<u>Consistent:</u> See Section C - Land Use Element that describes the land uses to be accommodated in the MCSP. The development program focuses primarily on the utilization of undeveloped, vacant land with good potential for higher intensity uses near the center of the Town, while addressing potential redevelopment and revitalization of the aging Moraga Town Center
c) <i>Housing.</i> Define appropriate locations and densities to achieve the Town's fair share of 'Regional Housing Need' in keeping with the goals and policies of the Housing Element. Provide a mix of housing types that is fitting with Moraga's community character and responds to the needs of lower and moderate-income households, the local workforce, seniors, and 'emptynesters.'	<u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> As identified in the Town's adopted Housing Element, the Proposed Project and Alternatives 3 and 4 provide adequate residential land use densities and proposed acreage for sufficient multi-family and high-density housing units to meet the Town's current "fair share" allocations for very low, low, and moderate income households; senior housing and assisted living/congregate care facilities.
	<u>Not Consistent:</u> Alternative 2 (339 units). Alternative 2 provides land uses for only low density, single-family homes affordable to above moderate-income households, and so will not address the Town's "fair share" affordable housing allocations. Alternative 2 provides no land uses for senior housing or assisted living/congregate care facilities.
d) <i>Retail and Office Uses.</i> Define appropriate locations and densities for new or redeveloped retail and office uses. Explore opportunities for new types of specialty retail stores and/or flexible small office arrangements that may respond to Moraga's evolving community needs.	<u>Consistent:</u> See Section C – Land Use Element, which describes the retail and office uses to be accommodated in the MCSP area; Figure 3-11 indicates the locations of these uses. The Proposed Project and all Action Alternatives provide land uses for retail, office, commercial, and mixed land uses.
e) <i>Town Center Facility.</i> Identify possible sites for a potential Town Center facility and define its relationship to and connections with other uses within the Specific Plan Area as well as with adjacent residential neighborhoods.	<u>Consistent:</u> The Proposed Project and Alternatives 3 and 4 provide land uses and conceptual design for a community center that could complement a Town Center facility that will serve as the commercial, retail, professional, and social core for the Town of Moraga. Alternative 2 does not provide a location for the proposed community center, because it was not included in the conceptual land use plan included in the General Plan. However, this alternative would still allow for development of a new Town Center area with the mix of land uses proposed in the General Plan (e.g., commercial, office and residential).
f) <i>Design Quality.</i> Establish design guidelines to create an attractive pedestrian-friendly environment and reflect Moraga's community character.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment consistent with the existing character of the Town.
g) <i>Traffic Access, Circulation and Parking.</i> Address traffic access and circulation issues and provide adequate parking to meet current and projected needs, located and designed consistent with the area's	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment consistent with the existing character of the Town while

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General Plan Goals and Policies	Consistency Analysis
pedestrian orientation.	providing for sufficient parking, roadway, and intersection improvements to meet projected increased levels of traffic.
h) <i>Pedestrian and Bicycle Circulation.</i> Create an environment that encourages walking and biking, with appropriate amenities and connections to adjacent residential neighborhoods. Consider providing some flexibility in parking standards in return for effective strategies and amenities that promote the use of alternative transportation modes.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment and a bike/pedestrian trail along Laguna Creek connected to other regional trails. Each plan will include amenities (e.g., trails and walkable neighborhoods) to encourage the use of non-automotive transportation.
i) <i>Transit.</i> Provide a comfortable and attractive central transit stop with park and ride facilities, passenger amenities, and pedestrian/bicycle connections to new and existing residential developments	<u>Consistent:</u> The Proposed Project and all Action Alternatives include a new town square focal point along an extension of School Street where a centrally located transit connection can be provided.
j) <i>Historic Preservation.</i> Preserve historic architecture to the extent possible at the Moraga Ranch and incorporate it into the overall design of the area.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for the renovation and preservation of the Moraga Ranch theme and incorporate it into the village center plan.
k) <i>Creek Protection.</i> Protect the creek area with appropriate development setbacks to protect its riparian environment and address flood risks. Consider incorporating the creek into a linear park feature connecting Moraga Road to the Moraga Way/School Street area, with pedestrian/bicycle connections across the creek as appropriate	<u>Consistent:</u> The Proposed Project and all Action Alternatives will preserve the Laguna Creek riparian corridor as open space, including the bed, bank, and associated riparian habitats, and provide for a recreation trail parallel to the creek. New road crossings will require permits and mitigation measures to restore potentially affected stream banks and native habitats. The Proposed Project and all Action Alternatives avoid new development within the 100-year floodplain, and all new development will be required to attenuate storm flows to the pre-project hydrograph.
l) <i>Orchard Preservation.</i> Encourage clustered housing design on the Moraga Ranch property to protect some of the remaining orchard areas, particularly those areas that are most visible from Moraga Way and Moraga Road.	<u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Action Alternatives 3 and 4 provide sufficient land resources to accommodate clustering and avoid significant visual resource effects, as seen from the adjoining scenic corridors of Moraga Road and Moraga Way. The Proposed Project includes adequate land area and densities to allow for clustering of residential units with areas of undeveloped open space and/or improved trails and landscaping between.  <u>Not Consistent:</u> <u>Alternative 2 (339 units).</u> Alternative 2 residential land use densities would require the use of considerably larger portion of the site, including the former orchard areas to construct the theoretical maximum number of single family housing units.
<b>LU3.3 Residential Densities in the Specific Plan Areas</b>	<u>Not Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> While the Proposed Project and Alternatives 3 and 4 provide land uses for sufficient multi-family and high-density housing units to meet the Town's current "fair share" allocations for very low, low, and moderate income households, the proposed densities are greater than that currently identified in the General Plan Land Use Element. Nevertheless, General Plan Appendix B specifically calls for higher densities to achieve the economic and housing goals of the overall General Plan. The densities included in the MCSP (10-12 and 20 DUA) have been proposed to allow for more clustered development near the MCSP center and to better meet regional housing goals for affordable housing units.  <u>Not Consistent:</u> <u>Alternative 2 (339 units).</u> Alternative 2 provides land uses for only low density, single-family homes affordable to above moderate-income households, and so will not address the Town's "fair share" affordable housing allocations.

# MORAGA CENTER SPECIFIC PLAN

## DRAFT ENVIRONMENTAL IMPACT REPORT

General Plan Goals and Policies	Consistency Analysis
<b>Community Design</b>	
<b>CD1 Natural Setting</b>	
CD1.1 Location of New Development. To the extent possible, concentrate new development in areas that are least sensitive in terms of environmental and visual resources, including: a) Areas of flat or gently sloping topography outside of flood plain or natural drainage areas. b) The Moraga Center area and Rheem Park area. c) Infill parcels in areas of existing development.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide land uses that will concentrate new development in flat, gently sloping areas, outside of mapped floodplains along Laguna Creek, outside of areas with native tree cover, and in infill areas in the MCSP area.
CD1.2 Site Planning, Building Design and Landscaping. Retain natural topographic features and scenic qualities through sensitive site planning, architectural design and landscaping. Design buildings and other improvements to retain a low visual profile and provide dense landscaping to blend structures with the natural setting.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide design guidelines to minimize grading of existing topography and landscaping and architectural design elements that will blend with the existing environmental and Town character.
CD1.3 View Protection. Protect important elements of the natural Setting to maintain the Town's semi-rural character. Give Particular attention to viewsheds along the Town's scenic corridors, protecting ridgelines, hillside areas, mature native tree groupings, and other significant natural features. Consideration should be given to views both from within the Town and from adjacent jurisdictions. Likewise, the Town should work with adjacent jurisdictions to protect views from Moraga to adjacent areas	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide design guidelines to minimize grading of existing topography, preservation of native trees along Laguna Creek, and landscaping and architectural design elements that will blend with the existing environmental and Town character.
CD1.5 Ridges and Hillside Areas. Protect ridgelines from development. In hillside areas, require new developments to conform to the site's natural setting, retaining the character of existing landforms preserving significant native vegetation and with respect to ridgelines, encourage location of building sites so that visual impacts are minimized. When grading land with an average slope of 20% or more, require 'natural contour' grading to minimize soil displacement and use of retainer walls. Design buildings and other improvements in accordance with the natural setting, maintaining a low profile and providing dense native landscaping to blend hillside structures with the natural setting.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide design guidelines to minimize grading of existing topography. Site-specific grading plans for hillslopes south of Moraga Road will be consistent with policy CD1.5.
CD1.6 Vegetation. Emphasize and complement existing mature tree groupings by planting additional trees of similar species at Town entries, along major street corridors, in and around commercial centers, in areas of new development, and along drainage ways. Encourage the use of native, fire resistive, and drought-tolerant species.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines that incorporate landscaping with native, drought tolerant, and fire-resistant species.
<b>CD2 Public Places</b>	
CD2.1 Public Places as Focal Points. Provide and maintain public parks and facilities that serve as community focal points, gathering places, and activity centers, with pedestrian and bicycle path connections to residential neighborhoods and commercial centers. Provide public views and inviting pedestrian entries into public places from adjacent streets and neighborhoods.	<u>Consistent:</u> The Proposed Project and Alternatives 3 and 4 include a new Community Center site, and the Proposed Project and all Action Alternatives include an integrated bike/pedestrian trail alignment along a preserved open space corridor parallel to Laguna Creek, and design guidelines to create attractive public views and inviting pedestrian entries.
CD2.2 Town Center Facility. Promote development of the potential Town Center facility as a central community gathering place and activity center, utilizing the Specific Plan process to ensure the facility has both visual and physical access from adjacent roadways and public areas.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include a new Town Center to serve as a socio-economic hub for the Town. The circulation plan will provide convenient and efficient access from adjacent roads.
CD2.3 Commercial Centers as Community Places. Encourage design improvements at the Moraga Center and Rheem Park Centers to create a stronger pedestrian orientation and support their role as community gathering spots and activity centers. Incorporate amenities such as plaza spaces, outdoor seating, shade, and landscaping to promote their use as social spaces. Consider the use of flexible setbacks (for example, with new buildings at or near the public sidewalk and parking located to the side or rear) to achieve pedestrian-oriented design goals.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include additional commercial land uses that will facilitate the accomplishment of these design improvements in the MCSP area.

## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

<b>General Plan Goals and Policies</b>	<b>Consistency Analysis</b>
CD2.5 Connections. Designate pedestrian and bicycle routes that connect selected public places with each other and with residential neighborhoods, schools, and commercial centers.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include designated bike and pedestrian routes to connect public places with each other and adjacent neighborhoods.
<b>CD3 Scenic Corridors</b>	
CD3.2 Visual Character. Improve the visual character along Scenic Corridors with lighting, landscaping and signage.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines to improve the visual character along Moraga Way, Moraga Road, and Canyon Road in the MCSP area.
CD3.4 Moraga Road. Improve the design quality and consistency of Moraga Road as the Town's primary boulevard linking the two major commercial centers.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines to improve the visual character along Moraga Road sections in the MCSP area.
CD3.5 Landscaping and Amenities. Use additional street tree planting, berms, fencing and ornamental landscaping to enhance the visual continuity along the Town's Scenic Corridors. Require appropriate landscaping for both public and private developments located on designated Scenic Corridors, including pedestrian lighting and street trees within existing commercial areas. Encourage use of native and drought-tolerant species and, where applicable, preservation of orchard trees.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines that incorporate landscaping with native and drought tolerant tree and shrub species that will enhance visual continuity.
<b>CD4 Single Family Neighborhoods</b>	
CD4.4 New Residential Developments. Design new single family developments to create high quality pedestrian environments with pathways to adjacent neighborhoods and, where feasible, commercial areas. Ensure that the layout of new residential lots respect the site topography and natural features. Where feasible, avoid standard repetitive lot sizes and shapes in hillside areas.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will include residential areas with high quality pedestrian environments and pathways to existing neighborhoods and the new downtown village center and commercial core of Moraga. A mix of residential densities are proposed to place a majority of new residential units in close proximity to commercial areas.
<b>CD5 Multi-Family Residential Developments</b>	
CD5.1 Location. Locate new multi-family developments in close proximity to commercial centers, transit stops, and community facilities such as parks and schools, with site design and landscaping to create buffers between adjacent uses while providing connection to pedestrian and bicycle paths.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will include multi-family residential areas in close proximity to commercial centers, transit stops, parks, and schools.
CD5.2 Design. Ensure that new multi-family developments are planned, designed and constructed to enhance the local area, reflecting the scale and quality of their surroundings. Encourage designs that help to break up large building masses, for example by breaking one large building into several smaller buildings; providing variations in rooflines; creating a three-dimensional façade rather than a massive, flat façade; and using landscaping to soften building edges. Architectural styles and materials should reflect the character of existing residential neighborhoods, with landscaping to enhance the natural setting.	<u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines consistent with policy CD5.2. Simulations of the proposed MCSP development demonstrate the architectural character that is envisioned for the area.
CD5.3 Open Space. Require usable private and common open space in all new multi-family residential development.	<u>Consistent:</u> The Proposed Project and Alternatives 3 (400 units) and 4 (560 units). The Proposed Project and Alternatives 3 and 4 include design guidelines and adjacent land uses that will provide usable private and common open space consistent with policy CD5.2.  <u>Not Applicable:</u> Alternative 2 (339 Units). Alternative 2 does not include any multi-family residential development.
CD5.4 Pedestrian Amenities. Design new multi-family developments to create high quality pedestrian environments, with connections to the Town's pedestrian path and trail system.	<u>Consistent:</u> The Proposed Project and Alternatives 3 (400 units) and 4 (560 units). The Proposed Project and Alternatives 3 and 4 include design guidelines and adjacent land uses that will provide multi-family housing with high quality pedestrian environments connected path and trail systems.  <u>Not Applicable:</u> Alternative 2 (339 Units). Alternative 2 does not include any multi-family residential development.

# MORAGA CENTER SPECIFIC PLAN

## DRAFT ENVIRONMENTAL IMPACT REPORT

General Plan Goals and Policies	Consistency Analysis
<b>CD6 Commercial Areas</b>	
<p>CD6.1 Design Quality. Improve the design quality of the Town's commercial centers, creating an attractive and inviting environment for shopping and socializing and enhancing their function as community focal points. Enhancements might include more landscaping; configuration of parking areas to incorporate more landscaping and create better pedestrian connections and entrances; architectural improvements to create visual focal points; creation of pedestrian walkways, plazas and seating areas; and signage improvements.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines to renovate the existing Moraga Town Center and create an attractive, pedestrian friendly new "village" environment to serve as a commercial core for the Town, consistent with policy CD6.1.</p>
<p>CD6.2 Traffic Access and Circulation. Ensure adequate traffic access, circulation and parking in the Town's commercial centers. Reduce potential safety hazards by minimizing the number of driveway openings onto public streets, encouraging side street access to commercial developments, and encouraging connections between developments.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include traffic and circulation design elements consistent with CD6.2. School Street will be extended to utilize the existing signalized intersection of St. Mary's and Moraga Road for primary access to the MCSP.</p>
<p>CD6.3 Pedestrian Orientation. Create a safe, inviting and functional pedestrian environment in commercial areas, with interconnected walkways; pedestrian amenities (e.g., seating, lighting, signage, landscaping); plaza areas; and outdoor café spaces. Where pedestrian paths cross parking areas or vehicle lanes, give clear priority to pedestrians through pavement markings, differentiation in the pavement surface, and signage.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines that will create a pedestrian friendly, revitalized retail and commercial "village" consistent with policy CD6.3.</p>
<p>CD6.4 Office Development. Encourage high quality office development projects in close proximity to the Town's retail centers, with pedestrian connections between them. Encourage office building designs that respect the visual dominance of the landscape, reflect the scale and character of adjacent neighborhoods, and create buffers between residential neighborhoods and arterial roadways.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include design guidelines and land uses that provide for high quality office space adjacent to the downtown commercial area accessible to pedestrians.</p>
<p>CD6.5 Moraga Center Area. Use the Moraga Center Area Specific Plan to create a community focal point and mixed-use activity center of businesses and higher density residences with a unified 'village' character. Provide a land use and zoning plan, design theme and circulation system (traffic, pedestrian and bicycle) for the entire Moraga Center area, including the Moraga Center shopping center; commercial uses in the Country Club Drive/School Street area (including the Moraga Barn); commercial uses on the east side of Moraga Road; the historical buildings, creek area and orchards in the Moraga Ranch; the proposed new Town Center facility; areas of potential new residential development; and adjacent existing residential neighborhoods. Consider also the pathways connecting between the Specific Plan Area and other Town facilities and attractions, including Moraga Commons, the Moraga Library, school facilities, Saint Mary's College, Hacienda de Las Flores, and the Rheem Park area.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include land uses and design guidelines developed to be consistent with policy CD6.5. The village theme incorporated along the extension of School Street and adjacent to the Moraga Center, Moraga Ranch and Laguna Creek serve to create a community focal point.</p>
<b>CD7 Historic Resources</b>	
<p>CD7.1 Designation of Historic Resources. Identify and protect buildings, sites and other resources in the community that give residents a tie with the past, which may include:</p> <ul style="list-style-type: none"> <li>a) Hacienda de Las Flores</li> <li>b) Older buildings at Saint Mary's College</li> <li>c) Trees with historical significance</li> <li>d) Moraga Ranch</li> <li>e) Moraga Barn</li> </ul>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include direction to preserve the Moraga Ranch and guidelines for building renovation in keeping with its existing character. Simulations of the proposed MCSP development demonstrate the type of infill proposed for the Moraga Ranch area. Existing mature trees and trees with historic significance will be maintained to the extent feasible during design and construction.</p>
<p>CD7.2 Historic Preservation. Promote the preservation and conservation of historic buildings and sites, providing incentives as appropriate for their retention and rehabilitation.</p>	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives include the requirement for evaluation of potential historic and prehistoric resources on the project site. Development throughout the planning area will be required to comply with standard practices of retaining an archaeologist or other appropriate professional to determine the potential significance of any resources</p>

## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

General Plan Goals and Policies	Consistency Analysis
	encountered through grading or trenching of the site.
<b>Housing</b>	
<b>H1 Housing and Neighborhood Quality</b>	
H1.4 Design Excellence. Review the design of new housing developments to ensure that they are compatible with the scale and character of the neighborhood in which they are located and the semi-rural character of the Town as a whole, consistent with policies in the Town's Community Design Element. Strive to ensure that affordable housing developments are well designed and professionally managed so that they provide a high quality living environment and contribute to the overall quality of life in the Town.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will provide land uses for a range of housing types consistent with existing neighborhoods and the Town's Community Design Element. Higher density housing is proposed in areas adjacent to existing commercial or office development, and where necessary, will be buffered from existing lower density residential developments.
<b>H2 Housing Mix and Affordability</b>	
H2.1 Housing Variety. Ensure that new residential developments provide the Town with a wide range of housing types to meet the various needs and income levels of people who live and work in Moraga.	<u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 will provide a range of housing types available to all income levels in the Town of Moraga, including single-family homes, townhouses, condominiums, senior housing, assisted living and congregate care facilities, and student, faculty, or staff housing for St. Mary's College. Elements of these alternatives will contribute towards the Town's compliance with meeting ABAG affordable housing goals.  <u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternative 1 provides no new housing for the Town and does not address an ongoing deficit of affordable or alternative housing options. Alternative 2 provides only single-family detached homes, and will not address the Town's shortfall of affordable housing, nor will it provide a range of housing types for a variety of household income levels.
H2.3 Fair Share Housing. Provide for Moraga's 'fair share' of the regional housing need, as identified by the Association of Bay Area Governments, by identifying adequate sites for higher density housing (at least 12 acres are to be zoned Residential – 10 DUA or 7.5 acres are to be zoned Residential – 16 DUA or some combination thereof) within the Moraga Center Area Specific Plan and Rheem Park Area Specific Plan areas, as provided on the General Plan Diagram. Additionally, work with Saint Mary's College, the Moraga School District and other property owners to identify and facilitate the development of affordable housing opportunities and also allow the development of attached or detached secondary living units where appropriate and feasible.	<u>Update with the current ABAG numbers. Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 will ensure that the Town meets its "fair share" housing goals in the current ABAG RHND (2007-2014) by identifying sufficient high density housing sites. The Proposed Project and Alternatives 3 and 4 specifically address affordable housing needs by providing opportunities for Saint Mary's College housing, and providing a range of densities from 3-20 dwelling units per acre that meet the high density housing land use goals set forth in the General Plan.  <u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternative 1 provides no new housing for the Town, and does not address an ongoing deficit of affordable or alternative housing options. Alternative 2 provides only single-family detached homes at up to 6 dwelling units per acre, and will not address the Town's shortfall of affordable housing or provide a range of housing types for a variety of household income levels. Alternatives 1 and 2 will not assist the Town in meeting the ABAG RHND "fair share" housing goals, nor will they address affordable or workforce housing needs of the Town.
H2.4 Multi-Family Housing Amenities. Ensure that multi-family housing developments provide adequate parking for residents and visitors as well as open space and recreational facilities to meet resident needs.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment consistent with the existing character of the Town while providing for sufficient parking and recreational improvements (e.g., trails and the community center) to meet projected demand.

## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

General Plan Goals and Policies	Consistency Analysis
H2.6 Density Bonus. Provide a density bonus of 25 percent or equivalent regulatory or financial incentive, consistent with State law requirements (California Government Code 65915), for residential projects that provide <i>at least</i> 10 percent of the dwelling units affordable to very low-income households, or <i>at least</i> 20 percent affordable to low-income households, or <i>at least</i> 50 percent suitable for senior citizens.	<p><u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 proposed land uses at residential land use densities of up to 20 dwelling units/acre that will allow the Town to meet the requirements for a 25% density bonus.</p> <p><u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternative 1 provides no new housing for the Town, and Alternative 2 provides only single-family detached homes. Neither alternative will contribute towards the Town's affordable housing or senior housing goals or qualify for a density bonus.</p>
H2.8. Affordable Housing Partnerships. Work with Saint Mary's College, the Moraga School District, affordable housing developers, and other groups and organizations to develop collaborative approaches for meeting local housing needs, including affordable workforce housing, senior housing, and other special housing needs.	<p><u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 include land uses that will allow Saint Mary's College to work with the property owners to consider housing opportunities for faculty, student, or staff; will provide housing for seniors and those requiring assisted care or congregate care; and will provide multiple sites for high density, multi-family housing affordable to a range of household income levels.</p> <p><u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternative 1 provides no new housing for the Town, and Alternative 2 provides traditional single-family detached homes that will not meet affordable housing goals or special needs housing.</p>
H2.10 Secondary Living Units. Allow secondary living units in single-family and multi-family areas, including MOSO and non-MOSO open space providing they comply with the Town's Municipal Code and Design Guidelines. Further, detached second units within existing subdivisions may be allowed on lots that are sufficiently large for accommodation of such units taking into consideration impacts to the neighborhood and its residents including but not limited to visual impacts and privacy impacts and where they are otherwise compatible with the neighborhood.	<p><u>Consistent:</u> The Proposed Project and all Action Alternatives allow for secondary housing units where they are in compliance with the Town's Municipal Code and Design Guidelines.</p>
<b>H3 Special Housing Needs</b>	
H3.3 Student Housing Demand. Cooperate with Saint Mary's College to address student housing needs.	<p><u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 each provide land use designations for up to 100 units of student or faculty housing to help address affordable housing needs.</p> <p><u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternatives 1 and 2 do not address affordable or workforce housing needs of Saint Mary's College.</p>
H3.4 Senior Housing. Encourage senior citizen housing, consistent with projected community needs. Include the following considerations: easy access to needed services, such as shopping, medical, transportation, etc.; off-street parking requirements consistent with project needs; limited income constraints of many elderly; and adaptable to mobility constraints of disabled.	<p><u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 address the demand for conveniently or centrally located senior housing needs in the Town by providing locations for 300, 150, and 230 senior housing units adjacent to downtown, respectively.</p> <p><u>Not Consistent:</u> <u>Alternatives 1 (No Project) and 2 (339 units).</u> Alternative 1 and Alternative 2 provide for no senior housing and will not address existing demand for senior housing in the Town.</p>
H3.5 Housing for People with Disabilities. Encourage housing that responds to the needs of people with disabilities, providing maximum housing choice consistent with community needs.	<p><u>Consistent:</u> <u>Proposed Project and Alternatives 3 (400 units) and 4 (560 units).</u> The Proposed Project and Alternatives 3 and 4 provide for a range of housing types and densities, as well as congregate care facilities and assisted living facilities.</p>

## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

<b>General Plan Goals and Policies</b>	<b>Consistency Analysis</b>
	<u>Not Consistent:</u> Alternatives 1 (No Project) and 2 (339 units). Alternative 1 and Alternative 2 provide for no alternative housing types and will not provide a range of housing choices.
<b>Circulation</b>	
<b>C3 Commercial Area Traffic and Parking</b>	
C3.1 Commercial Area Traffic Safety. Maintain effective and safe vehicle circulation into, out of, and within commercial areas.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will include an extension of the existing School Street to create a new primary access point at the existing St. Mary's Moraga Road signalized intersection.
C3.2 Traffic Volume Impacts. Utilize the Specific Plan process as well as the development review process to consider and address potential traffic impacts from new commercial development, in accordance with policies C1.2, C1.3 and C1.4. As one possible mitigation measure for commercial developments, consider establishing time restrictions on commercial deliveries to prohibit deliveries during peak traffic hours.	<u>Consistent:</u> The Proposed Project and all Action Alternatives have been evaluated for impacts to roadway and intersection traffic volumes. Mitigation measures have been proposed to reduce delay.
C3.3 Commercial Area Parking. Maintain sufficient, convenient, free parking within all commercial areas to accommodate actual and anticipated parking needs.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will balance demand with existing and proposed parking supply to ensure no impacts to adjacent residential and office areas.
C3.4 Through Traffic. Discourage traffic from traveling through the commercial centers	<u>Consistent:</u> The Proposed Project and all Action Alternatives will include an extension of the existing School Street to create a new primary access point at the existing St. Mary's Moraga Road signalized intersection.
<b>C4 Pedestrians, Bicycles and Transit</b>	
C4.1 Pedestrian Circulation. Provide a safe, continuous and connected system of pedestrian pathways through the Town, including sidewalks, paths, trails and appropriate crosswalks along all principal streets, to link residential neighborhoods, commercial areas, community facilities such as schools and parks, and other important destinations. Link this network as appropriate with the regional trails system.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment and a bike/pedestrian trail along Laguna Creek connected to other regional trails. Each plan will include amenities (e.g., trails and walkable neighborhoods) to encourage the use of non-automotive transportation.
C4.2 Bicycle Circulation. Develop a complete bicycle system with direct, continuous, interconnected pathways between residential and commercial areas, community facilities, commuter corridors and transit hubs.	<u>Consistent:</u> The Proposed Project and all Action Alternatives provide for design standards intended to create a pedestrian-friendly downtown environment and a bike/pedestrian trail along Laguna Creek connected to other regional trails. Each plan will include amenities (e.g., trails and walkable neighborhoods) to encourage the use of non-automotive transportation.
C4.3 Transit. Encourage the use of transit to and from the Lamorinda BART stations by providing: <ul style="list-style-type: none"> <li>• Efficient, comfortable, frequent and reliable bus service;</li> <li>• Roadways that are properly designed to accommodate bus maneuvering, stopping and parking;</li> <li>• Adequate, free, convenient all-day 'park and ride' facilities at major transit stops in the Town;</li> <li>• Public information programs to make the public aware of the service and promote its use;</li> <li>• Comfortable, safe and attractive amenities at bus stops.</li> </ul>	<u>Consistent:</u> The Proposed Project and all Action Alternatives include a new town square focal point along an extension of School Street where a centrally located transit connection can be provided.
C4.4 Trip-Reduction Strategies. Encourage development patterns and other strategies that may help reduce traffic trips, especially during the morning and afternoon peak hours. For example: <ul style="list-style-type: none"> <li>• Encourage home-based occupations and telecommuting;</li> <li>• Encourage mixed use, small office, and live-work Developments in centrally located areas of the Town (i.e., in the Specific Plan areas);</li> <li>• Encourage higher density housing to locate near transit Facilities;</li> <li>• Encourage young people to bike, walk or take the school bus to school; and</li> </ul>	<u>Consistent:</u> Proposed Project and Alternatives 3 and 4. The Proposed Project and Alternatives 3 and 4 include a proposed "village" area, which includes the MCSP lands located westerly of the existing shopping center. This is where a majority of new development will take place within the planning area. Properties within the Village area accommodate a range of residential densities for development of new specialty housing opportunities, specialty retail, office and support commercial uses. Based on its close proximity to existing and planned commercial services, residential densities in the "village" area are proposed to be up to 24 units per acre to encourage use of non-auto transportation.

## MORAGA CENTER SPECIFIC PLAN

### DRAFT ENVIRONMENTAL IMPACT REPORT

General Plan Goals and Policies	Consistency Analysis
<ul style="list-style-type: none"> <li>• Encourage ridesharing.</li> </ul>	<p><u>Not Consistent:</u> Alternative 2 (339 units). Alternative 2 provides only single-family detached homes and would not increase residential densities in the area of the existing and proposed commercial center.</p>
<b>Open Space and Conservation</b>	
<b>OS1 Open Space Preservation</b>	
OS1.7 Receiving Areas for TDRs. Designate the two specific plan Areas—the Moraga Center Area and Rheem Park Area—as 'receiving areas' for the transfer of development rights.	<u>Consistent:</u> The Proposed Project and Action Alternatives would not change the TDR process defined in the existing Moraga Municipal Code.
<b>OS2 Environmental Quality</b>	
OS2.1 Protection of Wildlife Areas. Prohibit development in locations where it will have a significantly adverse effect on wildlife areas. When development is permitted in the vicinity of wildlife areas, require implementation of appropriate mitigation measures to reduce any adverse impact upon the wildlife.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will preserve the most sensitive habitat type in the MCSP area - the central coast live oak riparian woodland in the corridor along Laguna Creek. This habitat will have adequate buffers to retain native tree canopy and have minimal intrusions in the form of new road crossings or pedestrian trails. Poor quality and isolated habitats occur in the remainder of the MCSP area.
OS2.2 Preservation of Riparian Environments. Preserve creeks, streams and other waterways in their natural state whenever possible.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will preserve the Laguna Creek riparian corridor, including the bed, bank, and important riparian habitats, consistent with General Plan policy. New road crossings will require permits and mitigation measures to restore affected stream banks and native habitats.
OS2.3 Natural Carrying Capacity. Require that land development be consistent with the natural carrying capacity of creeks, streams and other waterways to preserve their natural environment.	<u>Consistent:</u> The Proposed Project and all Action Alternatives. Proposed Project and all Action Alternatives. The Proposed Project and Action Alternatives as required in the 2002 Moraga General Plan (Policy OS3.6 Run-off from New Developments) will implement a Master Drainage Plan that will outline a system to attenuate and reduced peak storm water runoff and non-point source pollution to local creeks and streams. A reduction in peak storm flows will ensure that land development is consistent with the natural carrying capacity of Laguna and Moraga Creeks.  <u>Not Consistent:</u> Alternative 1 (No Project). Alternative 1 allows for no mitigation of storm water flows and thus no reduction in peak flows in area streams.
OS2.5: Wildlife Corridors. To the extent possible, connect open space areas so that wildlife can have free movement through the area, bypass urban areas and have proper access to adjacent regional parks and related open space systems.	<u>Consistent:</u> The Proposed Project and all Action Alternatives will preserve the most critical wildlife corridor in the MCSP area - the central coast live oak riparian woodland in a corridor along Laguna Creek. Although the MCSP area is largely isolated from surrounding natural areas, Laguna Creek and the associated woodland will preserve a contiguous movement corridor for many riparian associated species.
OS2.6: Reintroduction of Wildlife Species. Consider reintroduction into the natural environment of those species that could survive, would not be detrimental to the urban development, and which could be economically accomplished.	<u>Consistent:</u> Implementation of the Proposed Project and all Action Alternatives will require obtaining permits for new road crossings of Laguna Creek and will require habitat restoration to mitigate those impacts. Habitat restoration will enhance the suitability for wildlife species that may colonize the area. Direct reintroduction of wildlife species is not advised due to its relative isolation from other habitats.
OS2.7: Reintroduction of Native Plant Species. Consider reintroduction into the natural environment of plant species that are indigenous to the area and encourage programs to manage, reduce or eliminate the use and proliferation of non-native, invasive species. Encourage the use of native plant species in new landscaping plans.	<u>Consistent:</u> Implementation of the Proposed Project and all Action Alternatives will require obtaining permits for new road crossings of Laguna Creek and will require habitat restoration using indigenous plant species to mitigate those impacts. As part of habitat restoration, non-native invasive plant species may be removed or controlled. Landscaping plans developed for the MCSP

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	area will encourage the use of locally native plants.
OS2.8 Tree Preservation. Preserve and protect trees wherever they are located in the community as they contribute to the beauty and environmental quality of the Town.	<u>Consistent</u> . The Proposed Project and all Action Alternatives will preserve most native trees in the MCSP area along Laguna Creek. Other individual trees may be preserved as feasible in the design and construction under any action alternative.
OS2.9: Tree-Covered Areas. Preserve or substantially maintain in their present form certain tree-covered areas, especially with respect to their value as wildlife habitats, even if development in those areas is permitted. Give preference to the retention of original growth over replanting. These areas include, but are not limited to: <ul style="list-style-type: none"> <li>• Mulholland Hill (both northeast and southwest slopes)</li> <li>• Indian Ridge</li> <li>• Bollinger Canyon</li> <li>• Sanders Ranch properties</li> <li>• St. Mary's Road northeast of Bollinger Canyon Road</li> <li>• The "Black Forest" area located northerly of the terminus of Camino Ricardo</li> <li>• Coyote Gulch west of St. Mary's Road, to the north</li> <li>• Wooded area to the east and south of St. Mary's Gardens</li> <li>• Wooded area behind Donald Rheem School</li> <li>• Wooded area on the ridge south of Sanders Drive</li> </ul>	<u>Consistent</u> . The Proposed Project and all Action Alternatives will preserve the only native tree covered portion of the MCSP area - 16.8 acres of central coast live oak riparian woodland in a corridor along Laguna Creek. Other individual trees may be preserved as feasible during the design and construction under any action alternative.
<b>OS3 Water Quality and Conservation</b>	
OS3.1 Sewer Connections. Require all development to be connected to a sewage system, with exceptions granted only in those areas where it is demonstrated that a sewer connection is not feasible <i>and</i> it has been confirmed by a competent technical counsel that septic system effluent will not infiltrate underground aquifers.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will require all development to be connected to the existing CCCSD system.
OS3.6 Run-off from New Developments. Engineer future major developments to reduce peak storm runoff and non-point source pollution to local creeks and streams, taking into consideration economically viable Best Management Practices (BMPs) in the design of the project as well as factors such as the physical constraints of the site, the potential impact on public health and safety and the practicability of possible mitigation measures.	<u>Consistent</u> : The Proposed Project and Action Alternatives will implement a Master Drainage Plan that will outline a system to attenuate and reduced peak storm water runoff and non-point source pollution to local creeks and streams. The Master Drainage Plan will also include temporary and permanent BMPs.
OS3.7 Water Conservation Measures. Encourage water conservation in new building construction and retrofits.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will comply with current uniform building codes and include water conservation measures in the final project design.
OS3.8 Water Recycling. When and where feasible and appropriate, encourage the use of recycled water for landscape irrigation purposes.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will comply with the 2002 Moraga General Plan and include water recycling recommendations in the final project design.
<b>OS4 Air Quality</b>	
OS4.1 Development Design. Conserve air quality and minimize direct and indirect emissions of air contaminants through the design and construction of new development. For example, direct emissions may be reduced through energy conserving construction that minimizes space heating, while indirect emissions may be reduced through uses and development patterns that reduce motor vehicle trips generated by the project.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
OS4.2 Development Approval and Mitigation. Prohibit development projects which, separately or cumulatively with other projects, would cause air quality standards to be exceeded or would have significant adverse air quality effects through direct and/or indirect emissions. Such projects may only be approved if, after consulting with the Bay Area Air Quality Management District (BAAQMD), the Town Council explicitly finds that the project incorporates feasible mitigation measures or that there are overriding reasons for approving the project.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.

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OS4.3 Development Setbacks. Provide setbacks along high intensity use roadways to reduce resident exposure to air pollutants.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
OS4.4 Landscaping to Reduce Air Quality Impacts. Encourage the use of vegetative buffers along roads to assist in pollutant dispersion.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
OS4.5 Alternate Transportation Modes. Encourage transportation modes that minimize motor vehicle use and the resulting contaminant emissions. Alternate modes to be encouraged include public transit, ride-sharing, combined motor vehicle trips to work and the use of bicycles and walking.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
OS4.6 New Transportation Technologies. Encourage use of new transportation technologies such as alternative fuel vehicles that may provide environmental benefits such as reduced air pollution, lower energy consumption, and less noise.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
OS4.7 Trip Reduction Programs. Encourage employers to foster employer-based transportation control measures such as ride-sharing, use of public transportation, bicycling and walking to work.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines to maximize energy conservation and higher intensity land uses in the center of town to minimize the generation of new vehicle trips.
<b>OS5 Energy Conservation</b>	
OS5.3 Trip Reduction. Encourage energy conservation through measures that reduce automobile trips, such as transit supportive development, provisions for pedestrian and bicycle circulation, and promotion of home-based offices and telecommuting.	<u>Consistent</u> . The Proposed Project and Action Alternatives include higher intensity and mixed land uses in the center of Moraga that are consistent with reduction of vehicle trips, support of transit, and bike and pedestrian trips.
<b>OS6 Noise</b>	
OS6.4 Noise Impacts of New Development. Ensure that new development will not raise noise levels above acceptable levels on the Town's arterials and major local streets.	<u>Consistent</u> . The Proposed Project and Action Alternatives are consistent with acceptable noise levels on arterial and major local streets. The Proposed Project includes mounding buffers, landscaping, and setbacks for residential development to further reduce noise impacts from arterial and major local streets.
<b>Public Safety</b>	
<b>PS1 General Public Safety</b>	
PS1.1 Assessment of Risk. Include an environmental assessment of natural hazard risks in development proposals to permit an adequate understanding of those risks and the possible consequent public costs in order to achieve a level of 'acceptable risk.' Public costs should be expressed in terms of effect on life and property.	<u>Consistent</u> . Specific development proposals to be implemented under the MCSP will require an assessment of risk associated with development in areas of high hazards (e.g., steep slopes and floodways).
PS1.2 Public Review of Risk Data. Include appropriate cost-effective data in the evaluation of existing and potential hazards and make that data available for citizen review and comment in order to determine what public resources should be allocated to mitigate risk conditions.	<u>Consistent</u> . Specific development proposals to be implemented under the MCSP will require an assessment of risk associated with development in areas of high hazards (e.g., steep slopes and floodways).
<b>PS2 Police and Emergency Services</b>	
PS2.3 Public Safety and Design. Develop guidelines for the design and siting of buildings to reduce the opportunity for crime, and apply such considerations in the review of development proposals. Provide related information to the public to educate them on the benefits of appropriate home designs and other preventive steps they can take to reduce the incidence of crime in their neighborhood.	<u>Consistent</u> . The Proposed Project and Action Alternatives include roadway standards and building setbacks that will be reviewed and approved by Moraga-Orinda Fire Department and Moraga Police Department to ensure consistency with public safety considerations.
<b>PS3 Fire Safety and Emergency Services</b>	
PS3.1 Cooperation with the Moraga-Orinda Fire District. Cooperate with the Moraga-Orinda Fire District in developing standards, guidelines and local ordinances to assure provision of adequate fire protection and emergency medical service for all persons and property in the community.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines that will be reviewed and approved by Moraga-Orinda Fire Department to ensure consistency with public safety considerations. In order to maintain public services at existing levels, new development will be required to pay

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PS3.5 Development Review for Emergency Response Needs. Evaluate new development proposals to ascertain and mitigate problems associated with emergency response needs.	appropriate development impact fees.
PS3.6 Fire Vehicle Access. Provide access for fire-fighting vehicles to all new developments in accordance with fire access standards of the Moraga-Orinda Fire District and Town of Moraga Ordinances.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines that will be reviewed and approved by Moraga-Orinda Fire Department to ensure consistency with public safety considerations. In order to maintain public services at existing levels, new development will be required to pay appropriate development impact fees.
PS3.7 Preemptive Devices at Traffic Signals. Equip all new traffic signals with preemptive devices for emergency response services. Existing traffic signals significantly impacted by new developments shall be retrofitted with preemptive devices at developer's cost.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines that will be reviewed and approved by Moraga-Orinda Fire Department to ensure consistency with public safety considerations.
PS3.8 Fire Safety Devices in Buildings. Require the installation of appropriate fire safety devices in all structures at the time of original construction, additions, or remodeling, in accordance with adopted building codes and standards.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines that will be reviewed and approved by Moraga-Orinda Fire Department to ensure consistency with public safety considerations. In order to maintain public services at existing levels, new development will be required to pay appropriate development impact fees.
PS3.9 High Occupancy Residential Buildings. Require approved built-in fire protection systems in new construction in high occupancy residential buildings (such as multi-story/multiunit structures, group quarters, etc.) in accordance with Moraga-Orinda Fire District standards. For each new building or addition exceeding 5,000 square feet of fire area in high occupancy residential buildings, a comparable amount of existing fire area shall be equipped with approved built-in fire protection systems.	<u>Consistent</u> . The Proposed Project and Action Alternatives include Design Guidelines that will be reviewed and approved by Moraga-Orinda Fire Department to ensure consistency with public safety considerations. In order to maintain public services at existing levels, new development will be required to pay appropriate development impact fees.
<b>PS4 Seismic and Geologic Hazards</b>	
PS4.1 Development in Geologic Hazard Areas. Prohibit development in geologically hazardous areas, such as slide areas or near known fault lines, until appropriate technical evaluation of qualified independent professional geologists, soils engineers and structural engineers is completed to the Town's satisfaction. Allow development only where and to the extent that the geologic hazards have been eliminated, corrected or mitigated to acceptable levels.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will comply with UBCs and CBCs and include significant design criteria that have been tailored for California earthquake conditions in seismic zone 4. Mitigation Measure 4.I-1 of the 2002 Moraga General Plan EIR required the preparation of geologic hazard evaluations and the incorporation of appropriate design measures into each development project. Evaluations must be completed by qualified geologists, soils engineers or structural engineers.
<b>PS5 Flooding and Streambank Erosion</b>	
PS5.3 New Structures in Flood Hazard Areas. Avoid placing new structures within potentially hazardous areas along stream courses.	<u>Consistent</u> : The Proposed Project and all Action Alternatives propose the construction of one or more bridges across Laguna Creek and its tributaries. All new structures will be designed to not obstruct flood waters and be usable during 100-year flow events.
PS5.5 Streambank Erosion and Flooding Potential. Reduce the potential for future streambank erosion and flooding by requiring appropriate mitigation measures.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will implement mitigation measure 4.D-1b, Develop and Implement Laguna Creek Greenway Protection, Maintenance and Monitoring Program to reduce the potential for future streambank erosion and flooding. Additionally, mitigation measure 4.D-1a requires the development of a Master Drainage Plan to address storm water and flooding.
PS5.6 On-site Storm Water Retention. Require on-site storm water retention for new developments.	<u>Consistent</u> : The Proposed Project and all Action Alternatives will implement mitigation measure 4.D-1a, Develop and Implement a Master Drainage Plan. The Plan will address all storm water runoff and comply with NPDES permits and Contra Costa County C.3 provisions.
<b>Community Facilities and Services</b>	
FS2.1: Population Growth and School Capacity. Ensure that potential impacts on school facilities are considered	<u>Consistent</u> . The potential impacts of the Proposed Project and all Action Alternatives on school facilities are

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when reviewing and approving development proposals, working with the MSD and ACUHSD to determine potential impacts and establish appropriate mitigations, as necessary.	described and analyzed in this EIR. The MSD and AUHSD will review the data and analysis presented in this document.
FS2.2: Pace of Growth. Control the timing and location of new residential development in a way that allows the MSD and ACUHSD to plan and finance facility expansion in an orderly fashion.	<u>Consistent</u> . The scheduling of new residential construction for the Proposed Project and all Action Alternatives is considered in Mitigation Measures 4.K-1 as a means to mitigate potential adverse impacts on school facilities due to project-related increases in enrollments.
FS2.3: School Impact Fees. Cooperate with the school districts to assess an impact fee on new subdivision developments to offset the costs of facility expansion and other school impacts resulting from those developments, in accordance with state law.	<u>Consistent</u> . The payment of appropriate school impact fees consistent with State law (SB 50) for the Proposed Project and All Action Alternatives is described in Mitigation Measures 4.K-1 as a means to mitigate potential adverse impacts on school facilities due to project-related increased in enrollments.
FS3 Parks and Recreation	
FS3.2 Parks and Recreation Facilities in New Developments. Ensure that adequate recreation facilities are provided in areas of new residential development as a condition of development approval. Recreation facilities may include but need not be limited to amenities such as playgrounds, drinking fountains, trails, restrooms, picnic tables, play fields, and natural areas.	<u>Consistent</u> . The Proposed Project and Action Alternatives include new recreation facilities, including bike/pedestrian trails, permanently preserved open space along Laguna Creek, and a new community center (Proposed Project and Alternatives 3 and 4).
FS3.3 Park Dedication Requirements. Require residential and business developments to make appropriate provisions for park land dedication, trails, trail easements and/or in-lieu fees as part of the planning and development process. Land and/or facilities provided by the developer can be considered for credit toward the park dedication requirement.	<u>Consistent</u> . The Proposed Project and Action Alternatives include new recreation facilities, including bike/pedestrian trails, permanently preserved habitat along Laguna Creek, and a new community center (Proposed Project and Alternatives 3 and 4). If development does not include an adequate amount of parkland per new resident (see policy GM1.5), then appropriate in lieu fees or new park lands will be dedicated to the Town.
FS3.6 Access for People of All Abilities. Design and manage park and recreation facilities, including trail facilities, so that people of all abilities can access and enjoy Moraga's recreational opportunities, consistent with the requirements of the Americans with Disabilities Act (ADA).	<u>Consistent</u> . New park and recreation facilities constructed under the Proposed Project and Action Alternatives will be ADA-compliant according to state and federal laws.
FS3.7 Parking at Parks and Recreation Facilities. Strive to ensure all adequate parking at parks and recreation facilities.	<u>Consistent</u> . Parking facilities for new recreation facilities, including the community center, under the Proposed Project and Action Alternatives, will be reviewed by the Town during the design phase to ensure adequate parking is provided.
FS3.14 Neighborhood Compatibility. Ensure that recreational facilities and activities are compatible with the neighboring environment.	<u>Consistent</u> . New recreation facilities are proposed for locations near the Moraga Center commercial area and the existing Moraga Commons.
FS3.20 Trails Master Plan. Implement the Moraga Trails Master Plan through ownership and easements to establish and maintain a comprehensive trails network in the Town. Adjust the plan as necessary to take advantage of any new trail opportunities that may arise.	<u>Consistent</u> . The Proposed Project and Action Alternatives will provide new recreation trails that are compatible with, and connect to, the existing bike and pedestrian trails network.
FS3.21 Trail Design and Maintenance. Consider the following when planning, designing, implementing and maintaining trail facilities:  <i>Environmental Impacts</i> . Design trails for a minimum adverse environmental impact. <i>Fiscal Impacts</i> . Consider the fiscal impacts of accepting ownership and maintenance responsibility of trail facilities. <i>Safety</i> . Separate trail routes from motor vehicle routes whenever possible. <i>Use of Fire Trails</i> . In undeveloped areas, improve existing fire trails for trail use in cooperation with landowners.	<u>Consistent</u> . The Proposed Project and Action Alternatives will provide new recreation trails in areas that will minimize impacts to natural resources along Laguna Creek and provide for separation from roads where feasible.

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<b>Growth Management</b>	
<b>GM1 Growth Management</b>	
GM1.4 Traffic Service Standards. Establish the LOS standard for all Moraga roads, urban and suburban, as a 'high C' (0.75 to 0.79 vehicle to capacity ratio).	Consistent: Traffic analysis shows that intersection standards can be maintained within the Town limits using recommended mitigation measures to increase capacity at several intersections, including Moraga Road and Corliss Drive and Moraga Road and Moraga Way.
GM1.5 Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council. <ul style="list-style-type: none"> <li>• Parks. Five acres of parkland per 1000 residents (note: State law allows three acres of parkland per 1,000 residents to be required for dedication).</li> </ul>	See responses below.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . The Proposed Project and Action Alternatives include new recreation facilities, including bike/pedestrian trails, permanently preserved open space along Laguna Creek, and a new community center (Proposed Project and Alternatives 3 and 4). If development does not include an adequate amount of parkland per new resident (see policy GM1.5), then appropriate in lieu fees or new park lands will be dedicated to the Town.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . Moraga-Orinda Fire District Station 41 is within the boundaries of the Proposed Project as well as All Action Alternatives.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . Police response time to the project area is expected to not exceed three minutes response time.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . Central Contra Costa Sanitary District has stated there is adequate infrastructure to accept the increased wastewater flows that the Proposed Project and Action Alternatives would create.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . East Bay Municipal Utility District has stated there is adequate infrastructure to accept the increased water demand that the Proposed Project and Action Alternatives would create.
<ul style="list-style-type: none"> <li>• Fire. A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.</li> <li>• Police. Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.</li> <li>• Sanitary Facilities. The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.</li> <li>• Water. The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.</li> <li>• Flood Control. Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.</li> </ul>	<u>Consistent</u> . Contra Costa County requires that runoff in excess of existing drainage flows cannot be discharged to receiving streams or creeks. Hence, upstream detention will be required for development to reduce peak flows on the hydrograph attributed to new development included in the Proposed Project and Action Alternatives.
GM1.6 Development Impacts and Share of Costs. Require all new development to contribute to or participate in the improvement of traffic service, parks, fire, police, sanitary, water and flood control systems in proportion to the demand generated by project occupants and users.	<u>Consistent</u> . Through Development Agreements, the Proposed Project and Action Alternatives will construct or improve facilities or pay in lieu fees to maintain public services at current levels.
GM1.7 Development Review and Approval. Approve development projects only after making findings that one or more of the following conditions are met: <ul style="list-style-type: none"> <li>a) Standards for traffic level of service and facility/service performance will be maintained following project occupancy;</li> <li>b) Mitigation measures are available and will be required of the applicant in order to insure maintenance of standards;</li> <li>c) Capital projects planned by the Town or by a special district will result in maintenance of standards.</li> </ul>	<u>See response below.</u>
<ul style="list-style-type: none"> <li>a) Standards for traffic level of service and facility/service performance will be maintained following project occupancy;</li> <li>b) Mitigation measures are available and will be required of the applicant in order to insure maintenance of standards;</li> <li>c) Capital projects planned by the Town or by a special district will result in maintenance of standards.</li> </ul>	<u>Consistent</u> : Traffic analysis shows that intersection standards can be maintained within the Town limits using recommended mitigation measures to increase capacity at several intersections, including Moraga Road and Corliss Drive and Moraga Road and Moraga Way.
<ul style="list-style-type: none"> <li>a) Standards for traffic level of service and facility/service performance will be maintained following project occupancy;</li> <li>b) Mitigation measures are available and will be required of the applicant in order to insure maintenance of standards;</li> <li>c) Capital projects planned by the Town or by a special district will result in maintenance of standards.</li> </ul>	<u>See response above.</u>
<ul style="list-style-type: none"> <li>a) Standards for traffic level of service and facility/service performance will be maintained following project occupancy;</li> <li>b) Mitigation measures are available and will be required of the applicant in order to insure maintenance of standards;</li> <li>c) Capital projects planned by the Town or by a special district will result in maintenance of standards.</li> </ul>	<u>See response above.</u>
GM1.10 Findings of Consistency. The Contra Costa Transportation Authority requires that projects estimated to generate over 100 peak-hour vehicle trips to conduct a	<u>Consistent</u> : Prior to Town adoption of the MCSP, the project will be taken to the LPMC for review and determination of consistency with the Action Plan. If

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<p>traffic impact study. In addition, the Lamorinda Project Management Committee (LPMC) is required to review projects that are expected to add an additional 50 peak-hour trips. In such instances, the approval body must make Findings of Consistency with the adopted Level of Service standards and approved action plans in order to approve the project; unless mitigations are programmed to be completed within five years or Findings of Special Circumstances have been made.</p>	<p>necessary, Proposed Project and/or Action Alternative impacts will be mitigated to meet or exceed predicted impact levels under the Moraga 2002 General Plan implementation alternative.</p>

**Mitigation: 4.A-1: Eliminate Inconsistency with the Moraga General Plan.**

Although the densities identified in the MCSP are consistent with the General Plan's overall policy of accommodating higher densities at this location, at the time of adoption of the Moraga Center Specific Plan, the Town of Moraga shall also amend the Moraga General Plan to add residential land use densities consistent with the adopted Moraga Center Specific Plan. As currently proposed, the two new Proposed Project residential densities within the MCSP area would be 12 DUA and 24 DUA and the two new Alternative 3 and 4 residential densities would be 10-12 DUA and 20 DUA. Each alternative would also include mixed use land use designations: Mixed Retail/Residential (12-20 DUA) and Mixed Office/Residential (12-20 DUA).

**After**

**Mitigation: Less than Significant Impact; Proposed Project and Alternatives 3 and 4**

Amendment of the Moraga General Plan Land Use Policies 3.1 and 3.3 to recognize residential densities consistent with the adopted MCSP would reduce the identified conflict with land use goals and policies. Therefore, the impact would be reduced to less than significant.

**Significant Impact; Alternatives 1 and 2**

Alternatives 1 and 2 would not include a mix of the residential housing or residential densities necessary to meet housing goals of the Moraga General Plan. Therefore, the impact would be significant and unavoidable.

**Impact: 4.A-2. Will the Project result in conflicts between adjacent land uses (i.e., higher density versus lower density residential and residential versus retail/mixed use/office)?**

**Analysis: No Impact; Alternative 1 (No Project)**

Under the No Project alternative, no additional commercial or residential development would occur within the MCSP area. Therefore, new conflicts between adjacent land uses would not be possible.

**Analysis:** *Less than Significant Impact; Proposed Project and Action Alternatives*

Existing commercial and higher density residential uses in Moraga are predominantly located in or proposed for development in the Moraga Center and Rheem Park. The MCSP proposes a majority of the new commercial development (up to 90,000 square feet of commercial floor area and 50,000 square feet of office) and higher density residential for the Town, with the intent of creating a community focal point; encouraging mixed use; preserving natural amenities; improving the look and function of commercial activities; incorporating quality affordable housing; providing a pedestrian friendly environment; and addressing traffic and circulation issues. The MCSP provides guidelines for development of these higher density residential, commercial and mixed-use areas while achieving the overall General Plan objectives for maintaining quality residential areas.

However, the adoption of the proposed MCSP, even with design guidelines for new development, is not a guarantee that land use incompatibilities will not result from the construction of new higher density residential and commercial development in the MCSP area. This is possible because the final details of the proposed MCSP development will come with individual development applications and Development Agreements to be submitted after MCSP adoption. To reduce the chance for conflicts between adjacent land uses, more specific development standards (e.g., maximum decibel levels or foot-candles of illumination at the residential property lines) will be needed in the MCSP. However, the incorporation of such comprehensive, performance-based development standards in the MCSP would also eliminate the flexibility of the plan to respond to future market conditions and address potential land use conflicts with a wide array of possible solutions. Consequently the Specific Plan has incorporated a Matrix of residential land uses that may be adjusted, within limits, in order to feasibly respond to changing market conditions and community needs (see Table 2-2).

The following discussion addresses potential conflicts between existing and proposed land uses by the MCSP area. Areas not mentioned below are considered to be internal to the proposed MCSP development or are consistent with adjacent land uses.

**Camino Ricardo Residential Area 4.** The Proposed Project would add compact residential density housing (up to 12 units/acre) along the Camino Ricardo corridor. This housing would be across Camino Ricardo from existing low-density residential housing, accessed from, but not fronting, Camino Ricardo. To address potential conflicts between these two residential densities, the MCSP includes a landscaped set-back along Camino Ricardo that would use vegetation, berms and a walkway to visually separate the moderate density housing from the roadway. The proposed landscaped set-back is simulated in Figure 4.E-5. This simulation shows a narrow buffer with homes backing up to Camino

Ricardo. The landscaped set-back proposed by the MCSP will be similar to the one in place on the north side of Moraga Way, just west of its intersection with Camino Ricardo. In addition, new housing would back up to Camino Ricardo, gaining access from internal roadways. Under the action alternatives, the proposed residential densities along Camino Ricardo would be consistent with adjacent residential areas (3 units/acre) or to the density currently allowed in the Moraga Municipal Code (6 units/acre).

**Country Club Drive Mixed Office/Residential Area 14.** The Proposed Project and Action Alternatives would add office or high density residential housing (up to 24 units/acre in the Proposed Project and up to 20 units/acre in the Action Alternatives) on the undeveloped parcel located west of Country Club Drive. This development would be immediately adjacent to other office and high density residential uses located off of Country Club Drive, but would back up to existing low density housing to the west. To address the potential conflicts between these two residential densities, the Proposed Project and Action Alternatives propose access from School Street and Country Club Drive and would require set-backs and landscaping between the development and the adjacent lower density residential units.

**Moraga Way/Moraga Road Residential Area 15.** The Proposed Project would add compact residential density housing (up to 12 units/acre) at the termination of Moraga Way. This housing would be across Country Club Drive from existing low-density residential housing. To address potential conflicts between these two residential densities, the MCSP proposes primary access to this area through Moraga Way and would utilize the natural topography along Country Club Drive (the site is lower than adjacent uses) and landscaping to buffer the higher density residential units from the residential homes across the road. Under the Action Alternatives, the proposed residential densities would either be the same or less than the existing Moraga Municipal Code.

**Moraga Road Residential Area 16.** The Proposed Project and Alternative 3 (400 unit) would add compact residential and high density housing (up to 12 units/acre in the MCSP and up to 20 units/acre in Alternative 3) along Moraga Road. This housing would be immediately adjacent to high density housing to the south and north, and below a steep hillside located to the east. The hillside would not be developed based upon the extensive grading that would be required. As such, it will provide a buffer to the single family homes located immediately to the east of the site. To address potential conflicts between these two residential densities, the MCSP and Alternative 3 proposes the development of only the gently sloping land immediately adjacent to Moraga Road. The remainder of the site will be landscaped or maintained as open space. Under the remaining Action Alternatives, the proposed residential

densities would be equal to or less dense than the development proposed under the MCSP.

**Mitigation:** No mitigation is required.

**Impact:** **4.A-3. Will the Project substantially increase land use densities?**

**Analysis:** *No Impact; Alternative 1 (No Project) and 2 (GP Buildout)*

Under the No Project Alternative, no new development would be constructed within the MCSP area.

Under Alternative 2 (GP Buildout), new residential and commercial/office development would be constructed under the allowable densities (up to 6 units/acre) and codes contained in the existing Moraga General Plan and Municipal Code.

**Analysis:** *Less than Significant Impact; Proposed Project and Alternatives 3 and 4*

Under the Proposed Project and Alternatives 3 and 4, residential densities would be increased up to a maximum of 24 units/acre. This is an increase of up to 18 units/acre over the current maximum density in the Moraga Municipal Code and 8 units/acre over the 2002 General Plan density of 16 units/acre. The higher MCSP residential densities are proposed to provide a wider range of housing options in the Town and to meet regional housing goals and State law. High density housing located in the proposed Village area immediately adjacent to the Moraga Center and commercial areas along Laguna Creek would be internal to the MCSP and consistent with existing retail use. As noted in Impact 4.A-2, compact residential and high density housing located along Camino Ricardo and Country Club Drive would have the possibility to result in conflicts with existing lower density residential uses. Therefore, in these locations, landscaped setbacks are either included in the MCSP or proposed as a mitigation measure. As such, the proposed increase in maximum residential density is not considered to be a significant impact.

Under the Proposed Project, a maximum of 90,000 square feet of additional commercial and 50,000 square feet of additional office space may be constructed. Based upon sites designated for these two land uses in the MCSP, existing density allowed in the Moraga Municipal Code would be sufficient to provide the proposed development levels. Under Alternatives 3 and 4, the amount of commercial and office development would be reduced along with the amount of land designated for these two uses. Under these alternatives, existing density limits would be sufficient to provide the proposed uses.

**Mitigation:** No mitigation is required.

**Impact:** **4.A-4. Convert or result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or conflict with a Williamson Act contract?**

**Analysis:** *No Impact; All Alternatives*

There is no prime farmland, unique farmland, or farmland of statewide importance in the MCSP area. In addition, there are no Williamson Act contracts in place within the MCSP.

**Mitigation:** No mitigation is required.

#### **4.A-4 CUMULATIVE IMPACTS**

Changes to land use proposed for the MCSP would not result in effects to other parts of the Town. Therefore, the project would not result in any cumulative land use impacts. Cumulative effects associated with other physical changes in the environmental (e.g., traffic, scenic quality) are addressed in their respective sections of this EIR.

#### **4.A-5 PREPARERS AND REFERENCES**

##### **Preparers**

Rob Brueck, Hauge Brueck Associates

##### **Reviewers**

Christy Consolini, Hauge Brueck Associates

##### **References**

Town of Moraga Municipal Code

Town of Moraga. 2002 Moraga General Plan, Adopted June 4, 2002.

## 4.B POPULATION, EMPLOYMENT, AND HOUSING

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This section addresses the population, employment, and housing constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. The setting section provides information on the existing population, employment, and housing available in the Town of Moraga, the regulatory section describes applicable General Plan goals and policies, and the impacts section analyses the effects of the Proposed Project and Alternatives.

### 4.B-1 ENVIRONMENTAL SETTING

#### Population

The MCSP area is situated within the incorporated area and municipal services boundary of the Town of Moraga in Contra Costa County, California.

##### *Population Growth*

###### *Contra Costa County*

Contra Costa County is highly industrialized in the western and northern communities, while the inland areas to the south and east contain a mix of urban and suburban residential, commercial, light industry and agricultural uses. The County consists of 19 incorporated cities and towns and 22 unincorporated communities. The incorporated cities and towns are separate political entities and the unincorporated areas are within the land use jurisdiction of County government.

The County's total population is estimated at just over a million people as of 2006 ([www.census.gov](http://www.census.gov)- accessed 11/2/2007). Contra Costa County is part of the nine-county San Francisco Bay Area, an area with population of 6.8 million in the 2000 census. The Association of Bay Area Governments (ABAG) estimates the region's population will be 7.4 million in 2010, and will reach 8.07 million by 2020 and 9.03 million by 2035 (ABAG 2008a). Demographic research completed in 1977 projected that growth in the region would occur mostly outside the central cities. This expectation still holds, unless substantial changes occur in the region's land use and transportation patterns.

###### *Town of Moraga*

On January 1, 2006 the population of the Town of Moraga was estimated at 16,338 people. Since incorporation in 1974, the Town of Moraga has continued to develop primarily as a single-family residential community. According to ABAG projections the population is projected to grow to 17,700 by 2020 (ABAG

Projections 1998). Within the town limits there are approximately 100 acres of commercial developed property and almost 5,800 housing units on 3,000 acres. There are approximately 10 acres of vacant commercial designated property remaining according to the 2002 Moraga General Plan.

### ***Ethnicity***

#### *Contra Costa County*

The ethnic composition of Household population in Contra Costa County, California as reported in the 2000 U.S. Census is as follows (US Census Bureau 2001):

• White Alone -	621,490 (65.5%)
• Black or African American Alone -	88,813 (9.4%)
• American Indian or Alaskan Native Alone -	5,830 (0.6%)
• Asian Alone -	103,993 (11%)
• Native Hawaiian/Other Pacific Islander Alone -	3,466 (0.4%)
• Some Other Race Alone -	76,510 (8.1%)
• Two or More Races -	48,714 (5.1%)

#### *Town of Moraga*

The ethnic composition of population of the Town of Moraga, California as reported in the 2000 U.S. Census is as follows (U.S. Census Bureau 2001):

• White Alone -	13,212 (81.1%)
• Black or African American Alone -	165 (1.01%)
• American Indian or Alaskan Native Alone -	25 (0.15%)
• Asian Alone -	2,026 (12.44%)
• Native Hawaiian/Other Pacific Islander Alone -	14 (0.09%)
• Some Other Race Alone -	237 (1.45%)
• Two or More Races -	611 (3.75%)

### ***Household Characteristics***

#### *Contra Costa County*

Virtually all of Contra Costa County's population resides in Households. A household includes all the people who occupy a housing unit as their usual place of residence and a person, or one of the people, in whose name the home is owned, being bought, or rented. The average household size is 2.72 people and the average family size is 3.23 people. Of the Total Households, 70.4% are Family Households and 29.6% are Nonfamily Households, 38.8% are Households with individuals under 18 years and 22.2% are households with individuals 65 years and over. The median age in Contra Costa County is 36.4 years (<http://factfinder.census.gov/bf/> accessed November 2, 2007)

### *Town of Moraga*

Most of the population of the Town of Moraga resides in Households (89.99%). The average household size is 2.59 people and the average family size is 2.99 people. Of the Total Households, 76.39% are Family Households, 23.61% are Nonfamily Households, 35.91% are households with individuals under 18 years and 29.04% are households with individuals 65 years and over. The median age in the Town of Moraga is 42 years (<http://factfinder.census.gov/bf/> accessed November 2, 2007).

### **Employment**

#### *Contra Costa County*

Data from 2006 show that work force in Contra Costa County is primarily in management, professional or other related occupations. The Services and Sales and Office sectors provide additional employment opportunities. Educational services, health care and social assistance, and professional, scientific and management are the main industries. Per capita personal income for Contra Costa County in 2006, as reported on the US Census webpage (<http://factfinder.census.gov/bf/> accessed November 5, 2007) was \$30,790. The Median Family income was \$85,737 and the Median Household income was \$74,241. In 2006, an estimated 5.5% of families lived below poverty.

#### *Town of Moraga*

2001 unemployment rates in the Town of Moraga were published at 7.9%, which is above the County average of 5.6% and the national average of 5.8%. The latest available data from 2000 show that work force is primarily in management, professional or other related occupations. The Sales and Office sector provides additional employment opportunities. The educational services, health care and social assistance sector is the largest, the professional, scientific and management sector is the second largest and finance, insurance, real estate and rental and leasing sector is the third largest industry in the Town of Moraga (US Census Bureau 2001).

Approximately 56 percent of all Moraga households earned more than \$100,00 in 2000, according to the U.S. Census, whereas only 32 percent of the households in the County earned the same. According to ABAG, the 2000 household mean income in Moraga was roughly \$168,200 (in 2005 dollars) compared to the County at \$108,300. The mean household income is projected to grow to \$178,900 by 2015 (adjusted for inflation), increasing by nearly 12 percent. Income in all of the cities surrounding Moraga is projected to experience a similar increase.

## Housing

### *Contra Costa County*

The 2006 US Census Update reports that there are a total of 389,134 housing units in Contra Costa County. Of the total housing units, 92.4% are occupied, including 72% occupied by owners and 28% by renters. The remaining 7.6% of the total units are listed as Vacant.

As stated in the Contra Costa County General Plan, the County is faced with important housing issues, including: preserving and enhancing the affordability of housing for all segments of the population; providing new types of housing in response to changing trends in demographics; maintaining and improving the quality of housing stock; and achieving a balance between employment and housing.

### *Town of Moraga*

The 2000 US Census reports a total of 5,760 housing units in the Town of Moraga. Of the total housing units, 98.3% are occupied, including 84.1% occupied by owners and 15.9% by renters. The remaining 1.7% of the total units is listed as Vacant.

The housing stock is primarily of single-family homes, which comprise 84% of the total housing. Since incorporating in 1974, the Town of Moraga's housing stock has increased 30%, mostly as single-family homes. As compared to the rest of the San Francisco Bay area, this is a moderate growth rate. Most of the housing was constructed after 1960 and is in good condition.

Due to the desirability of the Town of Moraga's location, environment and schools, area housing is high-cost with land values substantially higher than in many other San Francisco Bay area communities. The median housing price in Moraga is significantly above the national average, and is unaffordable for households earning median income.

A vast majority of very low-income and low-income renters in Moraga are overpaying for their housing (i.e., paying more than 30% of their household income on rent). About one-third of low- and moderate-income homeowners also paid more than 30% of their income on housing costs. Students with limited incomes and seniors with fixed incomes are two of the groups most affected by high housing costs. Based on current rents and housing prices there are few housing units that are affordable to low- and moderate-income households, but there are a substantial number of low- and moderate-income households in the Town of Moraga.

The Association of Bay Area Governments (ABAG) develops a Regional Housing Needs Assessment (RHNA), which includes quantitative targets for each jurisdiction to accommodate projected population growth and demand for new

housing. Under State law, cities and Counties must set forth policies, land use plans, and zoning ordinances that allow sufficient numbers of new housing units to be developed at values affordable to the targeted range of household incomes identified in the RHNA.

Household income categories include very low (less than 50% of the median household income), low (less than 80% of the median household income), moderate (less than 120% of the median household income) and above moderate household income. Importantly, household income levels and housing prices are relative to local median values. In Contra Costa County, the current median household income for a family four is approximately \$83,800.

The most recent ABAG RHNA is for the period 2007-2014. The current “fair share” allocations for the Town of Moraga include 307 new dwelling units, with 84 affordable to households with very low incomes, 64 for low income, 97 moderate income, and 62 above moderate income. The Town’s allocation includes both the current 234 ABAG RHNA allocation and 73 residual affordable housing units from the 1999-2006 planning period as determined under AB 1233 by the State Department of Housing and Community Development (HCD).

Under California law (Government Code Section 65583), the Town must show that it either has sufficient sites at appropriate zoning densities to accommodate its regional share of affordable housing, has a program in place to ensure such sites will be made available, and/or has adopted alternative strategies to accommodate its share of the region’s housing need (such as through mixed commercial/housing development strategies). The ABAG encourages cities to adopt land use plans and zoning ordinances that support infill housing development that will minimize new vehicle trips and promote mass transit opportunities (ABAG 2007).

The Town currently has identified sites for 199 above moderate income housing sites, including 123 in the Palos Calorados subdivision, 66 in the Country Club Drive extension area, and 10 in the Los Encinos subdivision. This far exceeds the Town’s allocation of 62 above moderate income units. The development potential in the MCSP area is considered to exceed the remaining 248 units of affordable housing (Town of Moraga 2007).

An analysis of remaining development capacity in the Town conducted for the 2000 General Plan Update indicates 839 units (in addition to units approved or under construction) of future development capacity. Under the General Plan, the theoretical maximum residential development capacity would permit 698 additional dwelling units, 420 single-family and 278 multifamily. The estimate at actual build out, based in part on historical development patterns, is 558 dwelling units, 336 single-family and 222 multifamily. Outside of the MCSP area most remaining undeveloped land in Moraga (over 80%) is located in areas zoned as open space or defined as ‘study area’. Most of these open space areas are on hillsides or in other environmentally constrained areas that severely limit their development potential. Even those sites zoned for residential uses are constrained

by hillside slopes and other environmental factors that often reduce their development capacity below the zoned maximum. Thus, the total number of potential units that might be built on the identified vacant parcels may be lower when reviewed on a site-by-site basis.

## 4.B-2 REGULATORY SETTING

### Town of Moraga Goals, Objectives and Policies

The Moraga 2002 General Plan includes several policies related to population, employment, and housing. These goals and policies are presented in Table 4.A-3 in the Land Use section with analysis of the consistency of the Proposed Project and Alternatives. Table 4.B-4 shows the ABAG's quantitative regional "fair share" housing goals for the Town of Moraga as determined by the RHNA and State HCD for the period 2007-2014.

### Evaluation Criteria

Table 4.B-1 presents criteria for analysis of project-related population, employment, and housing impacts. These criteria are drawn primarily from Contra Costa County, the Town of Moraga and State of California agency policies and procedures, adapted where necessary to reflect CEQA requirements.

**Table 4.B-1**

### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.B-1. Will the Project displace substantial numbers of existing dwelling units or people, particularly units occupied by low- or moderate-income households, requiring the construction of replacement housing elsewhere?	Number of dwelling units occupied by low- or moderate-income households	No net loss of dwelling units occupied by a low- or moderate-income household or farm worker	CEQA Checklist XII(b-c); ABAG Fair Share Housing Allocation; Moraga General Plan Housing Element
4.B-2. Will the Project create a demand for housing or induce population growth in excess of growth anticipated in the Moraga 2002 General Plan either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	Number of housing units proposed; capacity of new infrastructure	Increase in housing units above ABAG Fair Share Housing Allocation or those analyzed in the General Plan EIR	CEQA Checklist XII(a-b); ABAG Fair Share Housing Allocation; Moraga General Plan Housing Element

**Table 4.B-1**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.B-3. Is the Project consistent with adopted goals and policies, related to population, employment, and housing.	General Plan goals and policies	More than 0 inconsistencies with adopted policies	CEQA Checklist XII (a-b); ABAG Fair Share Housing Allocation; Moraga General Plan Housing Element (Policies H2.1, H2.3, H2.4, H2.6, H2.8, and H3.3 - H3.5)

**4.B-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Table 4.B-2 presents potential population, employment, and housing impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives.

**Table 4.B-2**

## Population, Employment, and Housing Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
4.B-1. Will the Project displace substantial numbers of existing dwelling units or people, particularly units occupied by low- or moderate-income households, requiring the construction of replacement housing elsewhere?	No net loss of dwelling units occupied by a low- or moderate-income household or farm worker	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==
4.B-2. Will the Project create a demand for housing or induce population growth in excess of growth anticipated in the Moraga 2002	Increase in housing units above ABAG RHNA Allocation or those analyzed in the General Plan EIR	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) ○

**Table 4.B-2**

## Population, Employment, and Housing Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
General Plan either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?			Alternative 4 (560 Unit Alternative) ○
4.B-3. Is the Project consistent with adopted goals and policies, related to population, employment, and housing.	More than 0 inconsistencies with adopted policies	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) ● Alternative 2 (339 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==

Source: HBA 2008

Notes: 1. Type of Impact:

C Construction

● Significant impact before and after mitigation

P Permanent

○ Significant impact before mitigation; less than significant impact after mitigation

○ Less than significant impact; no mitigation proposed

== No impact

**Impact:** **4.B-1. Will the Project displace substantial numbers of existing dwelling units or people, particularly units occupied by low- or moderate-income households, requiring the construction of replacement housing elsewhere?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

The Proposed Project and All Alternatives will not result in the displacement of existing housing. Alternative 1 (No Project) involves no change to the existing environment. The Proposed Project and All Action Alternatives provide land uses that allow new residential development on currently undeveloped parcels in the center of the Town of Moraga. The Proposed Project and Alternatives 3 (400 units) and 4 (560 units) are expected to increase the number of affordable housing units in Moraga for very low, low, and moderate income households.

**Mitigation:** No mitigation is required.

**Impact:** **4.B-2. Will the Project create a demand for housing or induce population growth in excess of growth anticipated in the Moraga 2002 General Plan either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?**

**Analysis:** *No Impact; Alternative 1 (No Project) and Alternative 2 (GP Development Level)*

As shown in Table 4.B-3, Alternative 1 (No Project) involves no change to existing land uses and will have no effect on inducing population growth. Alternative 1 (No Project) includes no plans for new infrastructure, businesses, or homes, and therefore will not result in any additional population growth beyond that previously analyzed in the General Plan EIR for the MCSP area. Alternative 2 would provide for the levels of development anticipated in the General Plan for the MCSP area.

**Analysis:** *Less than Significant Impact; Proposed Project and Alternatives 3 and 4*

As shown in Table 4.B-3, the Proposed Project and Alternatives 3 and 4 include land uses that will provide for more total housing units than were analyzed under the MCSP scenario in the 2002 General Plan EIR, and therefore are expected to result in more population growth than anticipated under the General Plan. Full buildout of the General Plan was predicted to add 2,048 new residents to the Town of Moraga and result in a 12.5% total population growth rate. Construction of the Proposed Project is expected to result 1,614 new residents and a 10% overall population growth rate. The increased population rate associated with the Proposed Project and Action Alternatives is not considered to be a significant impact because it is associated with the construction of new residential units and would not put pressure on existing housing supplies in the Town. Further, the housing provided in the Proposed Project and Action Alternatives offers a wide range of housing choices for all income categories, as required by the State and housing law.

The Proposed Project (720 units), Alternative 3 (400 units) and Alternative 4 (560 units) also include other non-residential land uses that allow for substantially more commercial and retail space in the MCSP area than was analyzed under the full build-out scenario for the 2002 General Plan EIR. The Proposed Project and Alternatives 3 and 4 include land use plans for 100,000 to 140,000 sf of new commercial and office space, as well as hotels, bed-and-breakfasts, and assisted living/congregate care facilities. This level of development will require increased roads and other infrastructure in the downtown area. Commercial and office development, however, is expected to fill a gap in existing demand for these land uses in Moraga, providing increased opportunities for existing residents to work and shop in town, and is not expected to directly result in new population growth or demand for new housing beyond levels analyzed in the 2002 General Plan EIR.

**MORAGA CENTER SPECIFIC PLAN**
**DRAFT ENVIRONMENTAL IMPACT REPORT**

While increased population is not an impact by itself, there are potential environmental impacts associated with increased population. These impacts include affects on schools, public services, traffic, and other general growth-inducing impacts. The effects to these resources are discussed in specific resource oriented chapters elsewhere in this EIR. Therefore, population and housing growth that would result from implementation of the Proposed Project and Alternatives 3 and 4 will result in less than significant impacts.

**Table 4.B-3**
**Estimated Population Growth in MCSP Under Each Alternative Compared to General Plan Full Buildout**

	Proposed Project (720 units)	Alternative 1 (No Project)	Alternative 2 (339 units)	Alternative 3 (400 units)	Alternative 4 (560 units)	Town 2002 General Plan Full Buildout
Low Density Single Family Detached Homes <i>(3.4 persons/unit)</i>	20	0	339	50	65	420
Higher-Density, Multi-Family and Saint Mary's Housing <i>(2.23 persons/unit)</i>	400	0	0	200	265	278
Senior Housing <i>(1.68 persons/unit)</i>	300	0	0	150	230	0
Assisted Living, and Congregate Care <i>(1 person/room)</i>	150	0	0	60	90	0
Projected New Population at Full Buildout	1,614	0	1,153	928	1,288	2,048
Projected Growth Beyond 2002 GP EIR Full Town Buildout	-434	-2,048	-895	-1120	-760	0
Percent (%) Population Growth Beyond General Plan Full Town Buildout	-21	-100%	-44%	-55%	-37%	0
Projected Town Population with Full MCSP Buildout	17,952	16,338	17,491	17,266	17,626	18,386
Town Population Growth	10%	0%	7%	6%	8%	13%
Source: Moraga Municipal Code and Hauge Brueck Associates, 2008						

**Mitigation:** No mitigation is required.

**Impact:** **4.B-3. Is the Project consistent with General Plan policies related to population, employment, and housing?**

**Analysis:** *No Impact; Proposed Project and Alternatives 3 (400 Unit) and 4 (560 Unit)*

The Proposed Project and Alternatives 3 and 4 are consistent with General Plan policies by providing:

- a range of housing types at different levels of affordability,
- housing conveniently located adjacent to downtown office and retail areas,
- housing needs for Saint Mary's College.

The Proposed Project and Alternatives 3 and 4 meet the Town's quantitative goals for providing adequate land use designations to develop housing for low and very low income households. These housing goals are set forth in the General Plan for high density housing and the Town's affordable housing goals set forth by ABAG's 2007-2014 RHNA and the State HCD residual housing needs determination. Table 4.B-4 provides a summary of the housing types provided by the Proposed Project and each Alternative in relation to Moraga's "fair share" allocation for the 2007-2014 planning period. Although Alternative 3 will not meet all of the Town's allocation for moderate and above moderate housing, the Town already has adequate approvals and other non-MCSP land use designations and zoning to accommodate homes that are affordable to these income categories.

The Proposed Project and Alternatives 3 and 4 will meet the Town's requirements for density bonuses by providing at least 10% at very low-income household income levels and 20% at low-income levels. Table 4.A-3 in the Land Use section describes applicable General Plan policies and makes a consistency determination for each alternative. The Proposed Project and Alternatives 3 and 4 are consistent with General Plan policies.

**Table 4.B-4**

## Housing in Relation to Moraga's "Fair Share" Allocation

Affordability Category	ABAG/HCD Allocation, 2007-2014	Proposed				
		Project (720 units)	Alternative 1 (No Project)	Alternative 2 (339 units)	Alternative 3 (400 units)	Alternative 4 (560 units)
Low and Very Low Income <sup>1</sup>	148	400	0	0	250	330
Moderate and Above Moderate <sup>2</sup>	159	320	0	339	150	230
<b>Total Housing Units</b>	<b>307</b>	<b>720</b>	<b>0</b>	<b>339</b>	<b>400</b>	<b>560</b>

## Notes:

<sup>1</sup> High density (>12 units/acre) housing, including condominiums, townhouses, senior housing, and housing for Saint Mary's College.

<sup>2</sup> Compact residential (3-12 units/acre) homes.

**Analysis:** *Potentially Significant Impact; Alternative 1 (No Project) and Alternative 2 (339 Unit Alternative)*

Alternative 1 (No Project) involves no change to existing land uses and will have no effect on residential development. Consequently, the Town will continue to fall short of meeting its "fair share" housing goals allocated by ABAG. The Town has a residual deficit of providing adequate land uses for 73 affordable housing units in the 1999-2006 planning period, and now has a current "fair share" allocation of planning for 307 housing units including 148 units affordable to low and very low income households.

Alternative 2 (339 units) proposes no land uses suitable for high density or multi-family housing that will accommodate the Town's affordable housing "fair share" objectives. While Alternative 2 will exceed the Town's "fair share" allocation of 159 moderate and above moderate income housing, the Town already has approved or planned for sufficient land uses to accommodate well over 159 housing units in these income categories. Under Alternative 2, the Town will continue to fall short of meeting ABAG affordable housing allocations for the 2007-2014 planning period.

The 2002 General Plan EIR assumed that 86% of new housing units in the MCSP area would be multi-family, high-density units, with the remaining 14% low density, detached single-family residential. Alternative 2 involves plans for only detached single-family residential units at densities

of 3-6 units per acre, and will not provide a range of housing types. If the Town fails to adequately address its regional “fair share” goals of affordable housing in the MCSP area, it risks losing state funding for transportation and other projects. Unless replacement funding is secured, the fiscal impacts of the loss of State funding may result in a physical deterioration of Town services and the built environment. Table 4.A-3 in the Land Use Chapter describes applicable General Plan policies and makes a consistency determination for each alternative.

Alternative 1 (No Project) and Alternative 2 (339 units) will have potentially significant impacts on housing.

**Mitigation: 4.B-3. Identify Alternative Sites to Meet Housing Goals**

If Alternative 1 (No Project) or Alternative 2 (339 units) are adopted, impacts to housing affordability would have to be mitigated by identifying adequate sites outside of the MCSP area to make appropriate land use designations and zoning to accommodate a sufficient number of affordable housing units. This action would require an amendment to the existing General Plan to provide for higher residential densities in areas outside of the MCSP and to provide for affordable housing in other ways (e.g., mandating a greater number of second units in single family developments). The 2002 General Plan EIR states that the Rheem Center Specific Plan may be suitable for meeting these housing needs. However, there is not adequate land area in the Rheem Center to meet the goals for affordable housing.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Alternatives 1 (No Project) and 2 (339 units)*

Implementation of Mitigation Measure 4.B-3 would reduce environmental impacts associated with the provision of affordable housing under Alternatives 1 and 2. However, based upon the number of affordable units that could be provided in areas outside of the MCSP area, it is unlikely that the Town could meet their housing goals under Alternatives 1 and 2. Therefore, under Alternatives 1 and 2, this impact would remain significant and unavoidable.

**4.B-4 CUMULATIVE IMPACTS**

The Proposed Project, Alternative 3, and Alternative 4 not expected to result in significant impacts in relation to population, employment, and housing. Adoption of Alternative 1 (No Project) or Alternative 2 (339 units) will result in the Town continuing to lack sufficient alternative, high density, and affordable income housing types as identified in the General Plan and ABAG’s RHNA.

The 2002 General Plan EIR assumed full buildout would add 698 new homes and 2,048 new residents during the planning horizon, representing a 13% population increase for

the Town over the January 2006 population of 16,338 (see Table 4.B-3). Other approved or proposed projects currently in study in the Town of Moraga that will contribute to cumulative impacts on population, employment, and housing include the Bollinger Valley Project (up 121 homes), Palos Colorados (123 homes), and Rancho Laguna 2 (up 35 homes). These projects along with the Proposed Project will add up to 2,563 new residents to the Town of Moraga, representing a growth of 16%, with 515 more residents than were analyzed under the 2002 General Plan EIR.

Additional residents due to the build out of the Proposed Project in combination with growth assumptions in the General Plan or other planned or proposed projects will result in cumulative impacts related to population growth. There will be increased demand for public services and infrastructure, including schools, utilities, and roadways (traffic). Project-level and cumulative impacts to these resources are addressed in those sections.

The Town of Moraga has identified an existing deficit of affordable housing. The Proposed Project and Alternatives 3 (400 units) and 4 (560 units) provide a range of new housing types that will meet General Plan objectives and ABAG RHNA allocations, including affordable/workforce housing, senior housing, and high density housing adjacent to commercial and retail areas. Alternative 1 (No Project) and Alternative 2 (339 units) do not address the existing deficit of affordable housing in Moraga. Other projects, including Bollinger Valley, Rancho Laguna 2, and Palos Colorados, provide only low-density single family homes affordable to moderate and above moderate income households. While these projects may include second units that may qualify for affordable use, the construction of second units is speculative at this time. Therefore, Alternative 1 (No Project) and Alternative 2 (339 units), in conjunction with other proposed or approved projects in the Town, would contribute to the cumulative impact of a deficit of affordable housing in Moraga. With few opportunities to increase high density, multi-family, affordable housing units in Moraga, each project that does not address the deficit of affordable housing opportunities effectively reduces opportunities for future plans or projects to address this need.

The environmental consequences of not meeting affordable housing goals are two-fold. First, there is an elevated level of peak am and pm vehicle trips as Town based employees that cannot afford homes in Moraga must commute from more affordable areas. Second, the Town is at risk of losing State funding for transportation or other infrastructure projects if it does not provide opportunities to meet its “fair share” of affordable housing. If alternative funding sources are not available, this may result in a long-term degradation of public services and infrastructure.

## **4.B-5 PREPARERS AND REFERENCES**

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**MORAGA CENTER SPECIFIC PLAN**

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## **4.C GEOLOGY, SOILS, AND SEISMICITY**

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This section addresses the geologic, soil, and seismic constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. The setting section provides information on the physical characteristics, geology, faults, earthquake history, and other geologic hazards of the project area.

### **4.C-1 ENVIRONMENTAL SETTING**

#### **Physiography and Geology**

The MCSP area encompasses 187 acres in the center of the Town of Moraga in Contra Costa County, California. The MCSP area is approximately two miles west of Saint Mary's College and is accessible from Moraga Road and Moraga Way. The project area is bordered by residential neighborhoods on all sides. Moraga Commons Park abuts the project area to the east. The relief of the area is gently sloping hills to a nearly level valley bottom at Moraga Town Center, ranging from 495 ft above mean sea level (msl) to 590 ft msl.

The Town of Moraga is located in the central Coastal Range Geomorphic Province of California (California Division of Mines and Geology 2001). The structure of the coastal ranges in this region consists of northwest-trending mountain ranges and valleys. These folds and faults result from the collision of the Farallon and North American plates and subsequent translational shearing along the San Andreas Fault system. The Project is located within the East Bay Hills block, an uplifted range of hills bounded on the west by the active Hayward fault and on the east by the active Calaveras fault. Landslides and other slope stability problems are ubiquitous in the province but vary significantly in intensity depending on climate, topography, bedrock geology, and additional local factors.

#### **Soils**

Based on the United States Department of Agriculture (USDA) Soil Survey of Contra Costa County (1977), the primary soil associations in the project area are:

- Clear Lake Clay;
- Conejo Clay Loam, 0 to 2 percent slopes; and
- Dibble Silty Clay, 15 to 30 percent slopes.

None of these soils are considered hydric, although unnamed inclusions may be present within mapping units of Conejo clay loam and Clear Lake Clay that are considered hydric (USDA 1992).

Other common soils in the Moraga area are Los Osos Loam Clay, Alo Clay and Altamont-Fontana, and as stated in the Moraga General Plan EIR (2002), Alluvium and Mulholland Formation deposits are found throughout the valley areas while Orinda Formation, Grizzly Peak Formation and Siesta Formation are found in the Southwest of the town.

Impermeability, expansiveness, settlement, and erosion are four soil conditions that require environmental analysis as outlined in the Moraga 2002 General Plan. These conditions affect the types of building foundations that are appropriate for the Project area, the feasibility of irrigation, and the general possibility of water damage due to percolation of groundwater or infiltration of floodwaters.

Impermeability, or a very slow rate of percolation, can produce structural problems if water collects beneath or within the foundations of buildings. Positive drainage must be established to prevent supporting soils from becoming weakened by saturation.

Expansiveness, or the potential to swell and shrink with repeated cycles of wetting and drying, is a fairly common feature of fine-grained soils. Expansive soils generally do not provide adequate support for foundations unless they are specially treated. Sometimes they must be removed entirely and replaced with engineered backfill. If left in place untreated, expansive soils can cause unacceptable amounts of settlement over a period of years. The effects can range from nuisances such as sticking doors and windows to major structural damage. Expansive soils could result in failure of building foundations during a major earthquake.

Ground settlement is a function of the compressibility of loose deposits, such as loose alluvium or uncompacted fill, and the weight of overlying fill or structures. Settlement occurs as the material readjusts to the load being added. The amount of settlement depends on the characteristics of the alluvium or fill. If the soil is predominantly silty and clayey, the post-construction settlement could be substantial. Fill or alluvium composed primarily of sand is not susceptible to post-construction settlement unless the sand has an extremely low density.

Erosion potential is variable, although generally low, throughout the area. The highest erosion potential occurs where the soils are left in steep cut or fill slopes. Excessive soil erosion can create problems for foundation components in ways similar to those produced by expansive soils.

## Faults

Development in the Town of Moraga and the surrounding areas are affected by several active and potentially active fault zones, including those that are historically active (during the last 200 years), those that have been active in the geologically recent past (about the last 10,000 years, usually referred to as Holocene faults), and those that have been active at some time during the Quaternary geologic period (the last 2 million years). Figure 9-2 of the 2002 Moraga General Plan EIR illustrates faults in the project vicinity.

The Hayward, Calaveras, Concord-Green Valley, and San Andreas faults are part of the San Andreas rift system and are historically active in the last 11,000 years. Holocene faults occur as branches and traces along these major fault zones (Radbruch 1967). According to published maps, there are no Holocene faults in the project area. The Hayward fault is approximately six miles west of the project area, and the Calaveras, Concord-Green and San Andreas faults are three and a half miles east, seven miles east, and 25 miles west, respectively.

The northern section of the San Andreas is capable of generating the largest maximum credible earthquake (MCE), estimated at a magnitude of 8.3 on the Richter scale. The Calaveras and the Hayward faults can generate an MCE of magnitude 7.5, and the Concord fault can generate an MCE of magnitude 7.0 (Borcherdt 1975). Earthquakes of this magnitude are severe enough to create ground accelerations in bedrock and unconsolidated deposits that are severe enough to cause major damage to structures, foundations, and underground utility lines (Greensfelder 1980).

Other faults near the MCSP area include the Franklin, Pinole, Southampton, and Las Trampas faults. The Franklin, Pinole, and Southampton faults are classified inactive on published maps. Recent studies for Contra Costa County, however, indicate that these faults could be considered potentially active (Woodward-Clyde Consultants 1986). Contra Costa County classifies the Franklin as “faults with reported Late Pleistocene displacement, but not in a State of California special studies zone,” the Pinole fault as “faults inferred to be possibly active because of association with earthquake swarms,” and the Southampton fault as “faults inferred active on the basis of a tectonic model.” The Las Trampas fault is shown on published maps as traces between the Calaveras fault and the Pinole fault and the activity status is unknown. The fault, however, is pre-Quaternary in age and is presumed inactive. None of the faults that run through the Project area are considered active by the state of California, and no Alquist-Priolo Special Study Zones associated with active faults occur in the MCSP area (ENGEO, Inc. 2003).

## **Earthquakes and Historical Seismicity**

There is a high probability that a major earthquake will occur in the project area. The most likely event is assessed as a magnitude 7.1 earthquake on the Hayward fault. The current rating of the likely effects of such an earthquake in the Town of Moraga as determined by Association of Bay Area Governments (1995) is “very strong” to “violent” seismic shaking. These levels correspond to Modified Mercalli Intensity (MMI) VIII to IX. This scale qualitatively describes the effects of seismic shaking and severity of damage to structures. MMI scale VIII is the intensity at which major structural damage begins to take place. MMI IX involves violent ground shaking and heavy damage. The effects of Intensity IX are described as “considerable damage to designed structures; well designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse; underground pipes may be broken”.

The most significant and recent earthquake to affect the project area is the magnitude 7.1 Loma Prieta earthquake in 1989 that resulted in widespread damage throughout the San Francisco area. The Hayward fault located 6 miles west of the Project area has a 27%

probability, the Calaveras fault located 3.5 miles east from the Project area has an 11% probability; and the Concord-Green Valley fault located 7 miles east from the Project area has a 4% probability of producing a magnitude 6.7 earthquake in the next 30 years (Working Group on Northern California Earthquake Probabilities 1999).

## Geologic Hazards

The most substantial geologic hazards associated with any construction in the project area are earthquakes and their associated effects. Direct, local earthquake hazards include damage caused by ground shaking and fault displacements either by ground surface rupture or gradual fault creep. Bedrock formations and unconsolidated deposits (sediments and soils) exhibit different responses to seismically-induced groundshaking. The severity of groundshaking generally increases with proximity to the epicenter of the earthquake. However, given similar location and seismic energy output, the least amount of damaging vibration would occur on sites completely composed of bedrock. Sites that are underlain by major thicknesses of alluvium experience more damaging vibration because of the tendency of unconsolidated material to deform to a greater degree than bedrock. Unlike surface faulting, damage from groundshaking can occur at great distances from the actual location of the associated fault trace.

Indirect hazards presented by earthquakes include liquefaction of soil and earthquake-induced landslides, both triggered by ground shaking. The portions of the project that are located on or near steep terrain may also be subject to slope instability (landslide) hazards. Utility and sewer lines, embankments, roads and structures may be subject to this hazard. Analysis of these hazards is based on an understanding of the potential for any or all of these events to occur in the proposed project area.

### ***Fault Rupture and Creep***

Fault rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. Fault creep is the slow rupture of the earth's crust. The magnitude and nature of fault rupture are highly variable.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures by preventing the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses the hazards of surface fault rupture only and is not directed toward other earthquake hazards.

No part of the MCSP is within an Alquist-Priolo Earthquake Fault Zone (Figure 4B from Special Publication 42, Fault Rupture Hazard Zones in California) and, as discussed in the Moraga 2002 General Plan EIR, there are no mapped active faults in the project area. Therefore, the risk of ground rupture and creep is low. Geotechnical investigations will disclose site-specific geologic hazards.

### ***Ground Shaking***

The severity of ground shaking due to an earthquake is determined by several factors including the size of the earthquake, fault rupture characteristics, and proximity of the earthquake to the Project area. Additionally, the type of soil or bedrock beneath the site will determine the strength of ground shaking.

The potential for intensity of earthquake shaking is evaluated as MMI on a scale that relates to human perception and amount of damage. The MCSP has a probable maximum earthquake MMI of IX. Intensity IX involves violent ground shaking and heavy damage. The effects of Intensity IX are described as “considerable damage to designed structures; well designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse; underground pipes may be broken”. The MMI scale currently depicts shaking severity up to value X. Damage under Intensity X is even greater, with “some well built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked.”

The Uniform Building Code (UBC) classifies the area within Seismic Zone 4 (greatest potential for seismic activity) with a seismic zone factor Z of 0.4. Peak ground acceleration (PGA) has been calculated by the USGS at various grid points in California. PGA is a measure of earthquake acceleration, not a measure of total size of the earthquake but rather how severely the earth shakes in a given geographic area. Although correlating well with the Mercalli scale, PGA is measured by instruments and not from personal reports. The peak horizontal acceleration (PHA) is the most commonly used type of ground acceleration in engineering applications.

The probability of PGA exceedance is typically measured over a period of 50 years. For example, a 10% probability of exceedance in 50 years indicates that there is a 10% chance that the region will experience or exceed its PGA within the next 50 years. For the project area, the PGA with a 10% probability of exceedance is generally 0.42g from the Calaveras fault based on the Rock/Stiff Soil attenuation relation by Idriss in 1994 (ENGEO 2003). This level of acceleration is high, indicating the severity of potential earthquake hazards in the area.

### ***Liquefaction***

Liquefaction occurs in water-saturated sediments that are shaken by moderate to large earthquakes. The liquefied soil loses strength and may fail, causing damage to all types of structures. Liquefaction was responsible for much of the damage during the 1906 San Francisco earthquake. Liquefaction hazard analysis involves understanding the potential for ground shaking combined with the physical properties and conditions of the soil. In order for liquefaction to occur, two criteria must be met. First, there must be an opportunity for liquefaction to occur, and second, the soil must be susceptible to liquefaction as explained below.

### *Liquefaction Opportunity*

According to the criteria developed by the State of California Mining and Geology Board (CMGB), liquefaction opportunity is a measure of the potential for ground shaking strong enough to cause liquefaction (CMGB 1993). Liquefaction opportunity can be measured using ground acceleration. Based on the proximity to several active faults and the estimated potential for ground shaking, the project will be located on land that provides liquefaction opportunity.

### *Liquefaction Susceptibility*

Liquefaction susceptibility represents the degree to which soils will lose their strength when subjected to ground shaking. This loss of strength is governed primarily by the physical properties of the soil, including grain-size distribution, compaction, cementation, saturation, and depth. Loose, sandy, saturated soils typically lack resistance to ground shaking and are thus considered susceptible to liquefaction. Dry, dense, and cohesive soils are generally not considered susceptible to liquefaction.

### *Earthquake-Induced Landslides and Settlement*

Landslides triggered by earthquake ground shaking have historically been the cause for a great deal of property damage and loss of life. Areas most susceptible to earthquake-induced landslides are generally on steep slopes or adjacent to existing landslide deposits.

Settlement is the gradual downward movement of engineered structure (such as a building) due to the compaction of unconsolidated material below the foundation. Settlement accelerated by earthquakes can result in vertical or horizontal separations of structures or portions of one structure, cracked foundations, roads, sidewalks and walls, and in severe situations, building collapse and bending or breaking of underground utility lines.

## **4.C-2 REGULATORY SETTING**

### **State of California**

The primary state legislation concerning earthquake fault zones is the Alquist-Priolo Earthquake Fault Zone Act of 1972. None of the project area falls within Alquist-Priolo Earthquake Zone (as shown on the Fault Zone Maps - Publication 42). Regulations regarding geotechnical design criteria for the Project and alternatives are contained in the UBC. The UBC will apply to all construction. The Surface Mining and Reclamation Act (SMARA) of 1975 identifies mineral resource areas. No SMARA-listed lands exist within the project area.

### ***California Building Code***

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2, which is a portion of the California Building Standards Code. The California Building Standards Commission is responsible for coordinating building standards under Title 24. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to provide minimum standards to safeguard property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of building and structures within its jurisdiction. The UBC, published by the International Conference of Building Officials, is a widely adopted building code in the United States. The CBC is based on the 1997 UBC, with necessary California amendments. These amendments include significant building design criteria that have been tailored for California earthquake conditions.

The Project is located within Zone 4, one of the four seismic zones designated in the United States. Zone 4 is expected to experience the greatest effects from earthquake groundshaking and therefore has the most stringent requirements for seismic design. The national standards adopted into Title 24 apply to all occupancies in California, except for modifications adopted by state agencies and local governing bodies.

### ***Town of Moraga Goals, Objectives and Policies***

The Moraga 2002 General Plan has numerous goals, objectives and policies addressing geologic and seismic hazards. The applicable goals, objectives and policies are listed below. The Moraga Municipal Code, Title 14, also outlines regulations for grading excavations and fill. The code can be accessed online at <http://www.ci.moraga.ca.us/municipalcode/index.htm>.

**Goal PS1. General Public Safety.** A semi-rural environment that is relatively free from hazards and as safe as practicable.

**Policy PS1.1. Assessment of Risk.** Include an environmental assessment of natural hazard risks in development proposals to permit an adequate understanding of those risks and the possible consequent public costs in order to achieve a level of 'acceptable risk.' Public costs should be expressed in terms of effect on life and property.

**Policy PS1.3. High Risk Areas.** Prohibit development in 'high risk' areas, which are defined as being (1) upon active or inactive slides, (2) within 100 feet of active slides, as defined in Figure 4 of the Safety Element Appendix, or (3) at the base of the centerline of a swale, as shown on the Town's Development Capability Map.

**Policy PS1.4. Moderate Risk Areas.** Avoid building in 'moderate risk' areas, which are defined as being (1) those areas within 100 yards of an active or inactive landslide, as defined by the Town's Landslide Map, or (2) upon a body of colluvium, as shown in

Figure 2 of the Public Safety Element background information. Where it is not possible to avoid building in such areas entirely due to parcel size and configuration, limit development accordingly through density regulations, subdivision designs that cluster structures in the most stable portions of the subdivision, site designs that locate structures in the most stable portion of the parcel, and specific requirements for site engineering, road design, and drainage control.

Policy PS1.6. Public Safety Improvements. Give high priority to those public improvements that are related to public safety.

**Goal PS4. Seismic and Geologic Hazards.** Minimal risk to life and property due to Earthquakes and other Geologic Hazards

Policy PS4.1. Development in Geologic Hazard Areas. Prohibit development in geologically hazardous areas, such as slide areas or near known fault lines, until appropriate technical evaluation of qualified independent professional geologists, soil engineers and structural engineers is completed to the Town's satisfaction. Allow development only where and to the extent that the geologic hazards have been eliminated, corrected or mitigated to acceptable levels.

Policy PS4.2. Development Review for Geologic Hazard Areas. Require development proposals to address geologic hazards, including but not limited to landslide, surface instability, erosion, shrink-swell (expansiveness) and seismically active faults. Technical reports addressing the geologic hazards of the site, including but not limited to landslide, surface instability, erosion, shrink-swell (expansiveness) and seismically active faults, shall be prepared by an independent licensed soil engineer, geologist and/or structural engineer, approved by the Town and at the expense of the developer. All technical reports shall be reviewed by the Town and found to be complete prior to approval of a development plan.

Policy PS4.3. Development Densities in Geologic Hazard Areas. Minimize the density of new development in areas prone to seismic and other geologic hazards.

Policy PS4.4. High Occupancy Structures. Do not locate community buildings or other structures designed to accommodate large numbers of people near fault lines or any area where seismically induced slides are possible.

Policy PS4.5. Public Facilities and Utilities in Landslide Areas. Prohibit the financing and construction of public facilities or utilities in potential landslide areas.

Policy PS4.6. Construction Standards. Ensure that all new construction and applicable remodeling/reconstruction projects are built to established standards with respect to seismic and geologic safety.

Policy PS4.7. Construction Oversight. Adopt and follow procedures to ensure that the recommendations of the project engineer and the design and mitigating measures incorporated in approved plans are followed through the construction phase.

**Policy PS4.9. Water Storage Reservoirs.** Permit properly designed storage reservoirs for domestic water supply only in those locations that will pose no hazard to neighboring development.

**Policy PS4.10. Grading.** Grading for any purpose whatsoever may be permitted only in accordance with an approved development plan that is found to be geologically safe and aesthetically consistent with the Town's Design Guidelines. Land with a predevelopment average slope of 25% or greater within the development area shall not be graded except at the specific direction of the Town Council and only where it can be shown that a minimum amount of grading is proposed in the spirit of, and not incompatible with, the intention and purpose of all other policies of the General Plan. The Town shall develop an average slope limit beyond which grading shall be prohibited unless grading is required for landslide repair or slope stabilization.

**Policy PS4.11. Retaining Walls.** Discourage the use of retaining walls and other man-made grading features to mitigate geologic hazards, permitting them only when: required to decrease the possibility of personal injury or property damage; designed to blend with the natural terrain and avoid an artificial or structural appearance; appropriately screened by landscaping; designed to avoid creating a tunnel effect along roadways and to ensure unrestricted views for vehicular and pedestrian safety; and designed to ensure minimal public and/or private maintenance costs.

**Policy PS4.12. Maintenance of Hillside Areas.** Facilitate successful long-term maintenance of hillside areas held as common open space.

**Policy PS4.13. Public Information on Seismic and Geologic Safety.** Educate the general public regarding methods to improve seismic safety, with specific information targeted to hillside homeowners on ways to minimize landslide and erosion hazards.

**Policy LU1.8. Slope Restrictions.** The soil characteristics in Moraga are prone to landslide conditions which can cause damage to property, injury to persons, public cost and inconvenience; therefore, development shall be avoided on slopes of 20 percent or steeper, but may be permitted if supported by site-specific analysis. No new residential structures may be placed on after-graded average slopes of 25 percent or steeper within the development area, except that this provision shall not apply to new residential structures on existing lots that were either legally created after March 1, 1951 or specifically approved by the Town Council after April 15, 2002. All new non-MOSO lots shall contain an appropriate development area with an average after-graded slope of less than 25%. Grading on any non-MOSO land with an average predevelopment slope of 25% or more within the proposed development area shall be prohibited unless formally approved by the Town Council where it can be supported by site-specific analysis and shown that a minimum amount of grading is proposed in the spirit of and not incompatible with all other policies of the General Plan.

## Evaluation Criteria

Table 4.C-1 presents criteria for analysis of geologic, soil and seismic impacts.

**Table 4.C-1**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.C-1. Will the Project expose people or structures to major geologic hazards, such as strong seismic ground shaking, or seismic related ground failure (e.g., liquefaction)?	Location of facilities within an Alquist-Priolo earthquake fault zone	Any new facility without appropriate seismic design features located within a fault zone	CEQA Checklist VI (a-i); Alquist-Priolo (earthquake fault zone) Act; CDMG mapping of fault zones, Special Publication No. 42; 1997 Uniform Building Code with 1998 CA amendments, Moraga General Plan Policies PS4.1-4.3
4.C-2. Will the Project result in damage caused by unstable slope conditions (e.g., landslides, lateral spreading, subsidence, liquefaction, collapse, or soil erosion)?	Facilities located in an area of moderate to high landslide risk, defined by Contra Costa County, including roads with slopes greater than 20% and buildings on slopes greater than 30%	Any new facility within an area of moderate to high landslide risk without appropriate slope stabilization	Contra Costa County General Plan; CEQA Checklist VI (a-iv, c); Moraga General Plan Policies LU1.8, PS1.3-1.4, 4.1-4.3
4.C-3. Will the Project be located on expansive or corrosive soil, creating substantial risks to life or property?	Structures located in an area of expansive or corrosive soil	Any new structure located within an area of expansive soil without appropriate design features	CEQA Checklist VI (d); 1994 Uniform Building Code Table 18-1-B, Moraga General Plan Policy PS4.3
4.C-4. Will the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Hazards associated with septic tanks or alternative waste water systems located on incompatible soils	Any new septic or alternative waste system on incompatible soil	CEQA Checklist VI (e); SFRWQCB Permit requirements; Moraga General Plan Policy OS3.1

**4.C-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Table 4.C-2 presents potential geologic, soil and seismic impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for structural and safety hazards is determined by the geologic properties and soil characteristics of the project area. The proximity to active earthquake faults, potential for strong ground shaking, expansive soil properties

landslides, slope instability and groundwater are the primary geotechnical concerns for all Action Alternatives. Groundwater is discussed in Section 4.D.

The California Geological Survey (formerly the California Division of Mines and Geology) has prepared guidelines for geologic and seismic considerations in environmental impact reports (CGS, 1975) for identifying potential geologic hazards and site-specific data needed for design analysis and mitigation measures. These guidelines have been used during preparation of in this report.

**Table 4.C-2**

Geology, Soils, and Seismicity Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.C-1. Will the Project expose people or structures to major geologic hazards, such as strong seismic groundshaking, or seismic related ground failure?	Any new facility without appropriate seismic design features located within a fault zone	C, P	Proposed Project ⊖ Alternative 1 (No Project- Existing Conditions) == Alternative 2 (339 Unit Alternative- GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.C-2. Will the Project result in damage caused by unstable slope conditions (e.g., landslides, lateral spreading, subsidence, liquefaction, collapse, or soil erosion)?	Any new facility within an area of moderate to high landslide risk without appropriate slope stabilization	C, P	Proposed Project ⊖ Alternative 1 (No Project- Existing Conditions) == Alternative 2 (339 Unit Alternative- GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.C-3. Will the Project be located on expansive or corrosive soil, creating substantial risk to life or property?	Any new structure located within an area of expansive corrosive soil without appropriate design features	C, P	Proposed Project ⊖ Alternative 1 (No Project- Existing Conditions) == Alternative 2 (339 Unit Alternative- GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖

**Table 4.C-2**

## Geology, Soils, and Seismicity Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.C-4. Will the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Any new septic or alternative waste system on incompatible soil	P	Proposed Project == Alternative 1 (No Project (Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==

Source: HBA 2008

Notes: 1. Type of Impact:

C Construction



2. Level of Significance:

P Permanent



Significant impact before and after mitigation



Significant impact before mitigation; less than significant impact after mitigation



Less than significant impact; no mitigation proposed



== No impact

**Impact:** **4.C-1. Will the Project expose people or structures to major geologic hazards, such as strong seismic groundshaking, or seismic related ground failure?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the MCSP area will remain in the existing condition, no new construction will occur and no new impacts to geology, soils or seismicity will result based on evaluation criteria 1. There will be no new potential exposure to unstable slopes, earthquake hazards, or poor soil conditions, and no new operations or facilities that will be damaged in a seismic event.

*Significant Impact; Proposed Project and All Action Alternatives*

Implementation of the Proposed Project and all Action Alternatives will result in the construction of residential units, a community center, commercial and office space, recreation areas, and redevelopment of the existing commercial center. Although no active faults are mapped within the MCSP area, strong ground shaking associated with a major earthquake is a potentially significant impact due to proximity to active and potentially active faults. As stated in the 2002 Moraga General Plan EIR, the principal geologic hazards of concern in the Town are: strong seismic

shaking and associated localized ground failures such as liquefaction and settlement and soils that are characteristically susceptible to impermeability, excessive shrinking and swelling, settlement and erosion.

These potential hazards will be evaluated by professional geologists or geotechnical engineers and disclosed in geotechnical investigation reports prepared in compliance with Mitigation 4.I-1 of the 2002 Moraga General Plan EIR. Potential hazards will be mitigated by application of appropriate design standards for grading, foundations and structures as outlined in the Moraga Municipal Code. Additionally, compliance with UBCs and CBCs for seismic zone 4 and consistency with Public Safety Policies will also mitigate potential hazards to a less than significant level.

The new structures, infrastructure and other improvements will be designed and built in accordance with the latest UBCs, CBCs, Public Safety Policies and other code requirements. Buildings designed and constructed in accordance with these requirements, and the recommendations of the geotechnical investigation report, may experience some damage during a major seismic event but are unlikely to collapse or result in the loss of life.

**Mitigation:** **4.C-1. Implement Moraga General Plan Measure 4.I-1- Prepare geologic hazard evaluations and incorporate appropriate design measures into each development project.**

Geologic hazards evaluations are required to be performed by qualified California licensed geological, geotechnical, and civil engineering professionals. Geologic hazards are avoided or controlled by application of appropriate design and construction standards such as the 1997 UBC with 1998 CBC amendments. Consistent with Public Safety Policies PS4.1 – PS4.13, the Town implements the Geological Hazards Abatement District Ordinance, the Seismic Safety Checklist, and reviews all geologic hazards and geotechnical reports for development projects prior to issuance of grading and building permits. Additionally, the Moraga Municipal Code outlines design measures for grading,

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Complete mitigation of risk of damage from ground shaking due to a nearby major earthquake may not be possible. This measure reduces impacts to a less than significant level by implementing site-specific geotechnical recommendations and required professional engineering design and construction standards.

**Impact:** **4.C-2. Will the Project result in damage caused by unstable slope conditions (e.g., landslides, lateral spreading, subsidence, liquefaction, collapse, or soil erosion)?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the MCSP area will remain in the existing condition, no new construction will occur and no new impacts to geology, soils or seismicity will result based on evaluation criteria 2. There will be no new potential hazard caused by unstable slope conditions.

*Significant Impact; Proposed Project and All Action Alternatives*

Marginally stable slopes and soil conditions that are susceptible to landsliding and erosion affect much of the Town of Moraga. These hazards occur either due to direct effects of development (vegetation removal, grading and loading of slopes) or due to future practices such as increased irrigation for project landscaping. Careful investigation and design considerations are required to assure that developments do not promote unstable slopes.

The geotechnical investigations completed by ENGEO (ENGEO, Inc. 2003) for other projects in the Town of Moraga, found potential seismic hazards resulting from a nearby moderate to major earthquake to include primary ground rupture, ground shaking, lurching, liquefaction, dynamic densification, lateral spreading, earthquake-induced landsliding and soil erosion.

Landslides that result from strong ground shaking are the primary geotechnical considerations for projects in the Town of Moraga (2002 General Plan EIR) and are considered significant. The types of landslides in the MCSP area will be identified and mapped during geotechnical investigations required for permitting. Landslide mitigation measures will be designed into grading plans and the Master Drainage Plan where development and improvements are planned downslope of potential hazards. The specific location, extent, and depth of the required landslide mitigation will be outlined on the final grading plans.

There are areas of moderate erosion noted in the project area. Erosion is in the form of surface flow from impervious surfaces and compacted urban areas and gullying and streambank sloughing. Erosion is considered to be a potentially significant impact.

The potential for ground rupture is considered low since there are no known active faults mapped within the project area. Any development proposed across mapped lineations will be evaluated on a case-by-case basis. The potential for ground shaking at the project area is potentially significant due to proximity to active and potentially active faults and mitigation is necessary as discussed under impact 4.C-1.

Results from continuous core borings performed for a nearby project determined the potential for liquefaction in the area to be low, and thus the potential for lateral spreading and earthquake induced densification and collapse would also be low. Project-level geotechnical investigations will determine site-specific potential for liquefaction.

**Mitigation: 4.C-2. Implement Moraga General Plan Measure 4.I-2- Prepare and Implement Slope Stability Assessments, Site Grading Plans and Landslide Mitigation Designs**

Slope stability assessments, site grading plans, and landslide mitigation designs are required to be prepared by a qualified California licensed engineering geologist or geotechnical engineer and are reviewed and approved by the Town. Consistent with Public Safety Policies PS4.3 and PS4.4, the Town implements the Geological Hazards Abatement Ordinance, the Hillside Zoning Overlay, and reviews all geotechnical reports prior to issuance of grading and building permits. The General Plan recommends that a slope stability assessment be required for all new developments and that slope stability design measures be implemented for all slopes steeper than 3:1.

General mitigation measures will include:

- Avoiding placement of structures in or downslope of slide areas;
- Removing landslide debris;
- Replacing landslides with engineered fill;
- Providing toe buttresses, keyways, debris benches, deflection berms, debris catchment areas and setback areas;
- Prohibiting of ponding of stormwater;
- Installing sub-drains to control surface water flow and spring activity.

Additional site-specific landslide mitigations will be designed into the final grading plans and Master Drainage Plan (see section 4.D Water and Hydrology). During construction of the project, the Geotechnical Engineer or qualified representative will be present during all phases of grading operations to observe demolition, site preparation, grading operations and subdrain placement.

**After**

**Mitigation: Less than Significant Impact; Proposed Project and All Action Alternatives**

Complete mitigation of risk of landslides or other slope failure due to earthquakes may not be possible. However, the risk of damage will be reduced to within acceptable limits by incorporating appropriate engineering design measures and site-specific geotechnical recommendations.

**Impact:** **4.C-3. Will the Project be located on expansive or corrosive soil, creating substantial risk to life or property?**

**Analysis:** *No Impact; Alternative 1(No Project)*

Under Alternative 1 (No Project) the project area will remain in the existing condition, no new construction will occur and no new impacts to geology, soils or seismicity will result based on evaluation criteria 3. There will be no new potential risk to life or property resulting from development on expansive or corrosive soils.

*Significant Impact; Proposed Project and All Action Alternatives*

The expansive or corrosive nature of the native soil and bedrock across the project area is a potentially significant impact. The geotechnical investigation will determine the need for site-specific mitigation measures for expansive or corrosive soils.

The clayey soil and claystone in this area have high to critical plasticity and high to critical expansion potential. Expansive soils shrink and swell as a result of seasonal fluctuations in moisture content and this fluctuation can cause heaving and cracking of pavements, retaining walls, structures and slabs-on-grade. Building damage due to volume changes associated with expansive soils is reduced through proper foundation design. Successful construction on expansive soils requires special attention during the construction phase. To reduce the effects of the potentially expansive soils, foundations will be sufficiently stiff to move as rigid units with minimum differential movements or by deepening the foundation to below the zone of moisture fluctuation.

Soil pH, resistivity and conductivity are several properties used as a general indicator of soil corrosivity. Generally, soils that are either highly alkaline or highly acid are likely to be corrosive to steel. Soils that have pH of 5.5 or lower are likely to be highly corrosive to concrete. The hazard to structures and underground improvements from corrosive soils is potentially significant.

**Mitigation:** **4.C-3a. Prevent Moisture Variation of Expansive Soils**

These protective measures will be implemented during the design and construction phase of project-specific actions and will be documented by the geotechnical engineer:

- Over-excavate cut and fill lots;
- Moisture condition of fills to over optimum; and,
- Pre-soak slab subgrade areas.
- Provide a layer of non-expansive granular materials beneath slabs-on-grade as a cushion against building slab movement;

- Use aggregate base under exterior flatwork; and,
- Control irrigation and drainage adjacent to the new buildings.

#### **4.C-3b. Construct Appropriate Foundations for Expansive Soils**

A Geotechnical Investigation for a project-specific construction area will be required and potential for expansive soils onsite will be determined and disclosed. If expansive soils are present, in order to reduce the effect of the potentially expansive soils, the foundations will be sufficiently stiff to move as rigid units with minimum differential movements or by deepening the foundations to below the zone of moisture fluctuation. Both structural mat foundations and pier-to-grade beam foundation systems are appropriate. Slab-on-grade construction will be independent of foundations with a minimum thickness of four inches and a thickened edge extending at least six inches into compacted soil to minimize water infiltration.

#### **4.C-3c. Construct Appropriate Foundations for Corrosive Soils**

A Geotechnical Investigation for a project-specific construction area will be required and potential for corrosive soils onsite will be determined and disclosed. If corrosive soils are present, all concrete in contact with the soil shall be designed based on Table 19-A-4 of the UBC. All metals in contact with corrosive soils shall be designed based on the results of the soil corrosivity testing and subsequent recommendations of the manufacturer or engineer.

#### **After**

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Implementation of the mitigation measures during the design and construction of the project will ensure that the impacts from expansive or corrosive soils are reduced to less than significant levels.

**Impact:** **4.C-4. Will the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

**Analysis:** *No Impact; All Alternatives*

Under the Alternative 1 (No Project) the MCSP area will remain in the existing condition, no new construction will occur and no new impacts to geology, soils or seismicity will result based on evaluation criteria 4. Under the Proposed Project and All Action Alternatives, the MCSP will provide for on-site and off-site public facility improvements. Future development in the MCSP area will include connection to an existing Contra Costa County Sanitation District (CCCSD) gravity flow trunk sewer and the mainline sited between Moraga and Lafayette. Septic tanks

or alternative wastewater disposal systems will not be used. The existing service capacity if the CCCSD trunk line is adequate to support the full buildout of all Action Alternatives once the mainline is resized. Proportional shares of the upgrade cost will be incorporated into the fee for new development.

**Mitigation:** No mitigation is needed.

#### 4.C-4 CUMULATIVE IMPACTS

There are several Project impacts – either less than significant or significant – identified in the Geology, Soils, and Seismicity section: damage to project facilities from unstable slope conditions; potential damage from ground shaking; unstable slopes and soil erosion; and damage to project facilities from expansive or corrosive soils.

The Project will provide for land use plans and zoning that will allow the construction of additional homes, office, commercial and retail buildings in a seismically active area, and thus contributes to the cumulative exposure of structures to seismic hazards in the region as a whole. However, this is the case for any project constructed in the region, and the actual level of risk is site-specific and would not be cumulatively increased at any particular site and would not combine with similar effects that could occur with other projects in Moraga.

The risk of damage to project facilities from unstable slopes is also site-specific. Slope stabilization proposed as mitigation for these impacts will reduce the impact to less than significant, and because the risk is site-specific, it will not be cumulatively increased at any particular site.

Project components with potential for impacts from off-site erosion, as well as other projects within the Town of Moraga, will be subject to the permit and review process, and conformance with permit requirements, as well as local grading and building requirements will reduce any impacts to less than significant on a cumulative basis.

## **4.C-5 PREPARERS AND REFERENCES**

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## 4.D HYDROLOGY, SURFACE WATER QUALITY, AND GROUNDWATER

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This section describes the effects of the Moraga Center Specific Plan (MCSP) and alternatives on the hydrology, surface water quality and groundwater in the Laguna Creek/Upper San Leandro watershed in the Town of Moraga, Contra Costa County, California. This section presents an evaluation of the potential for water quality degradation, increased runoff, erosion and sedimentation, increased flooding, and groundwater infiltration.

### 4.D-1 ENVIRONMENTAL SETTING WATERSHED

The Town of Moraga is astride the watershed divide of the Las Trampas/Walnut Creek drainage to Suisun Bay and the Moraga/San Leandro Creek drainage to South San Francisco Bay. The MCSP Project lies along approximately one mile of Laguna Creek and its tributaries, which flows southwest through the town center to its confluence with Moraga Creek. Moraga Creek then flows south into San Leandro Reservoir. The ephemeral drainages that feed Laguna Creek begin at the slopes below the ridge crests to the north and northeast and are over steep, slowly permeable soils. During the rainy winter and spring months, the streams have steady flow. This area has a Mediterranean climate, however, with hot, dry summers, and as a result, stream flow is greatly reduced in the summer and fall. Mean daily flow in Moraga Creek is approximately 15.4 cubic feet per second (cfs) (Contra Costa County Clean Water Program 2004).

The overall hydrologic cycle begins with precipitation. Most of the precipitation in Contra Costa County falls in the form of rain from Pacific Ocean weather fronts moving easterly. Runoff and percolation from precipitation is captured in geologic basins. The Upper San Leandro/Moraga Creeks watershed is 20.6 square miles (13,184 acres) in size with approximately 15 percent of the area classified as impervious surface. The 187-acre MCSP area comprises approximately 1.5 percent of the total watershed. The watershed receives an average of 28 to 33 inches per year (in/yr) in rainfall and is part of the much larger South Bay Basin, oriented generally from the north to the south. The South Bay Basin forms part of the San Francisco Bay Hydrologic Region of California.

The total project area is 175.4 acres of which 88.2 acres are vacant or undeveloped. Existing surface conditions in the project area include some 87.2 acres of impervious surfaces and disturbed and revegetated urban area, both of which contribute to rapid runoff to established channels. Streambanks are disturbed by cattle activity in the upper watershed to the north of the MCSP area. The streambanks are incised and susceptible to further erosion. Developed areas with impervious surfaces contribute to channel incision by concentrating and increasing storm runoff. Oak groves, inhabiting the adjacent ravines, contribute substantially to bank stability and stream function by slowing erosion and increasing soil infiltration rates, which slows surface runoff and stabilizes base flow in streams.

The soil types in the project area are classified as Clear Lake Clay, Conejo clay loam (0 to 2 percent slopes) and Dibble silty clay (15 to 30 percent slopes). None of the soils are considered hydric, although unnamed hydric inclusions could be present within the mapped Conejo clay loam and Clear Lake Clay (USDA 1992).

Other common soils in the Moraga area are Alo Clay and Altamont-Fontana and as stated in the Moraga General Plan EIR (2002), Alluvium and Mulholland Formation deposits are found throughout the valley areas while Orinda Formation, Grizzly Peak Formation and Siesta Formation are found in the Southwest of the town.

## **Surface Waters**

Moraga and Laguna Creeks are tributary to San Leandro Reservoir and are designated "significant surface waters" by the State Water Resources Control Board (State Board) and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB). The SFRWQCB Basin Plan designates existing beneficial uses for Moraga and Laguna Creeks as municipal and domestic water supply, cold freshwater habitat, fish spawning, warm freshwater habitat, and wildlife habitat. Limited and proposed beneficial uses are contact and noncontact water recreation, respectively (SFRWQCB 1995). The surface and subsurface waters of the watershed are generally of compromised quality and are identified as "impaired" due to detection of diazinon, a restricted-use pesticide, in urban runoff.

## **Drainage and Flooding**

The Federal Emergency Management Agency (FEMA) flood insurance maps for the Town of Moraga show that 100- and 500-year flood zones exist along Moraga Road, the Corliss Drive Tributary, Moraga Creek, Ivy Drive Tributary, Lake La Salle, Las Trampas Creek, St. Mary's Road Tributary, Laguna Creek, Indian Creek, Larch Creek, South Branch of Moraga Creek, and areas near School Street, Miramonte Drive, Crossbrook Court, Donald and Ascot Drives, St. Andrews Drive, and Country Club Drive. Areas surrounding these zones may be prone to minimal flooding. Moraga Road bisects the MCSP area to the east and Laguna Creek bisects middle of the MCSP area. Additionally, Country Club Drive crosses the southern portion of the site.

At least 731,808 square feet or 16.8 acres of the project area is within the FEMA 100-year flood zone. The area is primarily central coast live oak riparian woodland.

## **Groundwater**

Groundwater is recharged through permeable materials, and natural ground water recharge areas are an important natural resource for the replenishment and storage of water supply for wetland and riparian environments. Approximately half the MCSP area, 87.2 acres, currently has impervious surfaces and disturbed urban area that typically contribute to increases in surface water runoff to creek channels and decreases in groundwater recharge.

## 4.D-2 REGULATORY SETTING

### United States Army Corps of Engineers

Under Section 404 of the Clean Water Act of 1972, the United States Army Corps of Engineers (USACE) regulates activities that result in the excavation or discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States may include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters that are subject to ebb and flow of tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers and streams (including intermittent streams), mudflats, sandflats, wetlands, vernal pools, playa lakes, natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; and,
- All tributaries of the above.

The USACE no longer takes jurisdiction over “isolated” wetlands and waters but does take jurisdiction over “adjacent” wetlands, which are hydrologically connected to navigable waters or tributaries of navigable water, even if such wetlands appear to otherwise be isolated. Additional regulations regarding USACE 404 permitting are discussed in Section 4.I - Biological Resources.

### California Department of Fish and Game

The California Department of Fish and Game (CDFG) exercises jurisdiction over wetland and riparian resources associated with the bed and bank of rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFG asserts that the jurisdictional area along a river, stream or creek is usually bounded by the top-of-bank or the outermost edges of riparian vegetation. Typical activities regulated by the CDFG under Sections 1600-1607 authority include installing outfalls, stabilizing banks, creek restoration, and implementing flood control projects. The CDFG has the authority to regulate work that will:

- Divert, obstruct or change the natural flow of a river, stream or lake;
- Change the bed, channel, or bank of a river, stream or lake; or
- Use material from a streambed.

### State Water Resources Control Board

#### **Storm Water Pollution Prevention Plan (SWPPP)**

The primary responsibility for the protection of both surface water and groundwater quality in California rests with the State Board Water Resources Control Board (State Board) and nine Regional Water Quality Control Boards

(RWQCBs). The Project will be required to comply with the California General Permit for Discharges of Storm Water Associated with federal Clean Water Act Section 402 Construction Activities (National Pollution Discharge Elimination System [NPDES] General Permit CAS000002) adopted by the State Board. NPDES permits are described below.

The Permit requires that construction contractors develop and implement a site-specific Storm Water Pollution Prevention Plan (SWPPP) to prevent storm water and groundwater pollution caused by construction activities. At a minimum, the SWPPP shall prevent debris, soil, silt, sand, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from construction or operation from entering into Laguna Creek and its tributaries and adjacent wetlands. The SWPPP will outline erosion control measures to be taken and Best Management Practices (BMPs) to be implemented to control and prevent, to the maximum extent practicable, the discharge of pollutants to surface waters and groundwater. Ground disturbing activities that occur in streams or in upland areas that may cause soil erosion into stream channels and wetlands shall be conducted during the dry season to minimize potential for siltation. In addition, the SWPPP will have a plan for responding to and managing accidental spills during construction and a plan for management and disposal of pumped groundwater, if necessary. The SWPPP will address overall management of the construction project such as designating areas for material storage, equipment fueling, concrete washout, and stockpiles.

### ***Porter-Cologne Water Quality Control Act***

Under the Porter-Cologne Water Quality Control Act (Cal. Water Code §§ 13000-14290) the State Board is authorized to regulate the discharge of waste that could affect the quality of the State's waters including projects that do not require a federal permit through the USACE. In order to meet federal Clean Water Act Section 401 Certification standards (see below), it is necessary to address hydrologic issues related to a project including:

- Wetlands;
- Watershed hydrograph modification;
- Proposed creek or riverine related modifications; and,
- Long-term, post-construction water quality.

Additional regulations regarding 401 certification are discussed in Section 4.I, Biological Resources.

### ***San Francisco Bay Regional Water Quality Control Board***

The State Board administers State and federal regulations that pertain to water quality including Sections 401 and 402 of the federal Clean Water Act. The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) is one of the nine RWQCBs in California that maintain *Basin Plans* that include comprehensive lists of water bodies in

each area, as well as detailed language about the components of applicable water quality standards. Section 13241, Division 7, of the California Water Code stipulates that each RWQCB shall establish water quality objectives to protect beneficial uses and to prevent water quality degradation. Water quality objectives for the project area are outlined in the Basin Plan for the San Francisco Basin in California.

### ***National Pollution Discharge Elimination System***

As authorized by the USEPA, the State Board and RWQCBs implement the Section 402 Clean Water Act NPDES Permitting Program and requirements in California. The objective of this program is the control and reduction of pollutants to water bodies from non-point source discharges. The SFRWQCB also issues NPDES point source permits for discharges from major industry into water bodies in the San Francisco Bay Region.

To be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity, improvement projects disturbing more than one acre of land during construction are required to file a Notice of Intent (NOI). Applicants must propose control measures that are consistent with the State General Construction Permit. A SWPPP that includes BMPs designed to reduce potential impacts to surface water quality through the construction and life of the project must be developed and implemented for each site covered by the General Permit. Additional SWPPP requirements are discussed above in the State Board sub-section.

### ***Sections 401 and 404***

Clean Water Act Section 401 requirements generally relate to State certification of federal permits, including those issued by a federal agency under Clean Water Act Section 404. In addition, the SFRWQCB regulates waste discharges under the California Water Code, Section 13263. Pursuant to Section 401 of the Clean Water Act and EPA 404(b)(1) guidelines, in order for a USACE federal permit applicant to conduct any activity which may result in discharge into navigable waters, they must provide a certification from the SFRWQCB that such discharge will comply with the State water quality standards. Jurisdiction also includes those permits issued by a federal agency under Clean Water Act Section 404. The SFRWQCB has a policy of no net loss of wetlands in effect and typically requires mitigation for impacts to wetlands before it will issue water quality certification.

### ***Total Maximum Daily Loads***

The SFRWQCB has found that Bay Area urban streams do not consistently meet the Basin Plan's narrative water quality objectives pertaining to toxicity. In response, the SFRWQCB has adopted a Basin Plan amendment that establishes a water quality attainment strategy and Total Maximum Daily Load (TMDL) to reduce diazinon and pesticide-related toxicity in urban creeks (SFRWQCB 2006). The amendment specifies a concentration target of 100 nanograms of diazinon per liter (as a one-hour average) as well as generic pesticide-related toxicity targets to

comply with the applicable water quality objectives established to protect and support beneficial uses.

Pollution prevention is the most important feature of the TMDL strategy. The TMDL requires implementation of BMPs and control measures to reduce pesticides in urban runoff for NPDES permits for urban runoff from sources such as industrial facilities, construction sites, Caltrans facilities, universities, and military installations. Control measures for construction and industrial sites are required to reduce discharges based on Best Available Technology Economically Achievable. NPDES permits for these sites must also implement certain general requirements and education and outreach activities as well as appropriate monitoring.

### **California Department of Water Resources**

The mission of the California Department of Water Resources (DWR) is to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments. DWR operates and maintains the State Water Project, including the California Aqueduct. The department also provides dam safety and flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs.

### **Contra Costa County**

The Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) provides flood protection in the cities and in unincorporated areas of the County. Drainage and floodplain permits are required by the CCCFCWCD for construction in flood zones. The CCCFCWCD administers County Ordinance No. 90-74, which requires the collection of drainage fees for the creation of new impervious surfaces in the County. The CCCFCWCD finds that new development, with the associated increase in impervious cover, can have adverse effects on regional drainage systems and requires those systems to have upgrading and maintenance. The ordinance requires the collection of fees based on \$0.17 per square foot of new created impervious area to address these effects and support upgrades to and maintenance of existing drainage systems.

### **Contra Costa Clean Water Program**

Contra Costa County has authority to enforce NPDES permits. Post-construction BMPs required as part of the Federal NPDES program must adhere to Contra Costa Clean Water Program C.3 standards. The San Francisco and Central Valley RWQCBs added provision C.3 to the State NPDES General Construction Permit in February 2003 (RWQCB 2003). The Contra Costa Clean Water Program was established as the local entity responsible for implementing compliance with the federal Clean Water Act to control stormwater pollution and is comprised by Contra Costa County, 19 incorporated cities, and the CCCFCWCD. The C.3

requirements are separate from, and in addition to, requirements for erosion and sediment control and for pollution prevention measures during construction.

The C.3 provision contains enhanced performance standards to address the post-construction and some construction phase impacts of new and redevelopment projects on stormwater quality. The Performance Standards in this Provision are intended to address impacts of these projects to downstream beneficial uses from urban runoff pollutants including those generated by changes in amount and timing of stormwater runoff, such as increases in peak runoff flow and duration that can cause increased erosion of stream banks and channels. Project site designs must minimize the area of new roofs and paving. Pervious surfaces should be used instead of paving, where feasible, so that runoff can percolate to the underlying soil. Runoff from impervious areas must be captured and treated. The permit specifies ways to calculate the required size of treatment devices. Projects may also be required to detain or infiltrate runoff so that peak flows and durations match pre-project conditions. In addition, project applicants must prepare plans and execute agreements to insure that the stormwater treatment devices are maintained in perpetuity.

The program is being conducted in compliance with the municipal NPDES Permit No. CAS0029912 issued by the SFRWQCB in 1999 and amended in 2003. The permit contains a comprehensive plan to reduce the discharge of pollutants to the "maximum extent practicable" and mandated that participating municipalities implement an approved stormwater management plan by September 1, 1993. The program incorporates BMPs that include construction controls (such as a model grading ordinance), legal and regulatory approaches (such as stormwater ordinances), public education and industrial outreach (to encourage the reduction of pollutants at various sources), inspection activities, wet-weather monitoring, and special studies.

### **Town of Moraga Goals, Objectives, and Policies**

The Town of Moraga has adopted numerous goals and policies, pertinent to the topic of hydrology, water quality, and groundwater that apply to the formulation of evaluation criteria and impact analysis for the project. The Moraga 2002 General Plan goals, objectives, and policies that provide guidance for development in relation to hydrology, surface water and groundwater resources in the project area are listed below.

**Goal OS2. Environmental Quality.** Environmental quality in the future that is as good or better than today.

**Policy OS2.2. Preservation of Riparian Environments.** Preserve Creeks, streams and other waterways in their natural state whenever possible.

**Policy OS2.3. Natural Carrying Capacity.** Require that land development be consistent with the natural carrying capacity of creeks, streams and other waterways to preserve their natural environment.

**Goal OS3.** Water Quality and Conservation. Protection of water resources through protection of underground aquifers and recharge areas; maintenance of watercourses in their natural condition; and efficient water use.

Policy OS3.1. Sewer Connections. Require all development to be connected to a sewage system, with exceptions granted only in those areas where it is demonstrated that a sewer connection is not feasible and it has been confirmed by a competent technical counsel that septic system effluent will not infiltrate underground aquifers.

Policy OS3.2. Polluting Materials. Prohibit the accumulation and dumping of trash, garbage, vehicle lubricant wastes and other materials that might cause pollution.

Policy OS3.3. Street and Gutter Maintenance. Maintain streets and gutters to prevent accumulation of debris and litter.

Policy OS3.4. Watercourse Capacity. Ensure that the design capacity of watercourses is not exceeded when approving new development.

Policy OS3.5. Watercourse Preservation. Whenever possible, preserve and protect natural watercourse areas that will reflect a replica of flora and fauna of early historical conditions.

Policy OS3.6. Run-off from New Developments. Engineer future major developments to reduce peak storm runoff and non-point source pollution to local creeks and streams, taking into consideration economically viable BMPs in the design of the project as well as factors such as the physical constraints of the site, the potential impact on the public health and safety and the practicability of possible mitigation measures.

Policy OS3.7. Water Conservation Measures. Encourage water conservation in new building construction and retrofits through measures such as low-flow toilets and drought tolerant landscaping.

Policy OS3.8. Water Recycling. When and where feasible and appropriate, encourage the uses of recycled water for landscaping.

Policy OS3.9. East Bay MUD Lands. Encourage preservation of East Bay Municipal Utility District Lands for watershed use.

**Goal PS5. Flooding and Streambank Erosion.** Minimal risk to lives and property due to flooding and streambank erosion.

Policy PS5.1. Public Information on Flood Hazard Mitigation. Educate streamside property owners regarding potential flooding and streambank erosion hazards, their responsibilities for streambank maintenance and repair, and mitigation measures that may be used to address potential hazards.

Policy PS5.2. Development on Floodways. Restrict new development in floodways in accordance with FEMA requirements.

Policy PS5.3. New Structures in Flood Hazard Areas. Avoid placing new structures within potentially hazardous areas along stream courses.

Policy PS5.4. Existing Structures in Flood Hazard Areas. Require the rehabilitation or removal of structures that are subject to flooding or streambank erosion hazards.

Policy PS5.5. Streambank Erosion and Flooding Potential. Reduce the potential for future streambank erosion and flooding by requiring appropriate mitigation measures.

Policy PS5.6. On-site Storm Water Retention. Require on-site storm water retention for new developments.

Policy PS5.7. Flood Control. Utilize flood control measures where appropriate to avoid damage to sensitive and critical slope areas, coordinating with the County Flood Control and Water Conservation District to evaluate watersheds and design flood control projects.

Policy CD1.1. Location of New Development. To the extent possible, concentrate new development in areas that are least sensitive in terms of environmental and visual resources, including:

- a) Areas of flat or gently sloping topography outside of flood plain or natural drainage areas.
- b) The Moraga Center area and Rheem Park area.
- c) Infill parcels in areas of existing development.

Policy GM1.5. Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council.

**Parks.** Five acres of parkland per 1000 residents.

**Fire.** A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.

**Police.** Maintain a three-minute response time for all life threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.

**Sanitary Facilities.** The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.

**Water.** The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.

**Flood Control.** Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.

## Evaluation Criteria

The state of California has developed surface and ground water quality criteria to protect the beneficial uses of water resources. These criteria are outlined in Table 4.D-1. According to Appendix G of the CEQA Guidelines, the Proposed Project will result in significant adverse impacts if it will:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the established drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Expose people or structures to inundation by seiche, tsunami, or mudflow.

**Table 4.D-1**

**Evaluation Criteria with Points of Significance - Hydrology, Surface Water Quality and Groundwater**

<b>Evaluation Criteria</b>	<b>As Measured by</b>	<b>Point of Significance</b>	<b>Justification</b>
4.D-1. Will the Project degrade surface water quality or violate any water quality standards or waste discharge requirements?	Constituent pollutant concentrations in receiving waters	Pollutant concentrations above exceedence threshold or permit standards	CEQA Checklist VIII (a); SFWQCB NPDES Permit Requirements
4.D-2. Will the Project substantially deplete groundwater supplies or interfere with groundwater recharge?	Volume or rate of groundwater use and infiltration	Net decrease in aquifer volume or net lowering table	CEQA Checklist VIII (b)
4.D-3. Will the Project substantially alter existing drainage patterns resulting in substantial erosion, sedimentation, or flooding in new areas, or alter storm runoff such that storm drainage capacity would be exceeded?	Delineated floodplain, wetland and riparian areas, storm hydrograph, flow stage and velocity	New areas or facilities prone to flooding, erosion or sedimentation; Net increase in peak storm runoff	CEQA Checklist VIII (c-e); SFRWQCB NPDES Permit Requirements; CCCFCWCD Regulations; Moraga General Plan Policies OS3.4-3.6, PS5.1-5.7, and GM1.5.
4.D-4. Will the Project expose people or structures to inundation by seiche, tsunami, or mudflow?	Structures or facilities located in areas subject to seiche, tsunami, or mudflow	Any new structure facility located in areas subject to seiche, tsunami, or mudflow	CEQA Checklist VIII (j)
4.D-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam?	Structures or facilities located below a levee crown or dam	Any new structure or facility located below a levee or dam	CEQA Checklist VIII (i)
4.D-6. Will the Project place structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	Structures or facilities located in flood zone	Any new structure or facility located in a flood zone	CEQA Checklist VIII (g-h), Moraga General Plan Policies CD1.1, PS5.2-5.3 and GM1.5

**Table 4.D-1**

**Evaluation Criteria with Points of Significance - Hydrology, Surface Water Quality and Groundwater**

4.D-7. Will the Project expose people or structures to increased potential for flooding, bank erosion and/or sedimentation?	Increase in the peak 100-year storm runoff to streams. Compliance with local and state storm water quality regulations requiring implementation of Best Management Practices.	Increase greater than 0 cfs acre. Any failure to implement effective, reasonable and appropriate measures.	CEQA Checklist VIII (c-e); State of California General NPDES Permits for Discharges of Stormwater Associated with Construction and Industrial Activities, and Moraga General Plan Policy GM1.5.
4.D-8. Will construction of the Project result in degradation of surface water quality?	Compliance with local and state storm water quality regulations requiring implementation of effective best management practices	Any failure to implement effective, reasonable, and appropriate measures	CEQA Checklist VIII (f); State of California General NPDES Permits for Discharges of Stormwater Associated with Construction and Industrial Activities

**Evaluation Criteria for Surface Water and Groundwater**

The evaluation criteria for surface water quality are presented in Table 4.D-2. These criteria are drawn from a review of the relevant literature on water quality. These include a review of local, State of California, and federal agency policies and procedures, adapted when necessary to reflect CEQA requirements. Evaluation criteria for groundwater quality are discussed below the table.

**Table 4.D-2**

## Evaluation Criteria with Points of Significance – Surface Water Quality

Evaluation Criteria	As Measured by	Point of Significance	Justification
Total Coliform	MPN/100L <sup>1</sup>	Geometric mean > 100	SFRWQCB Basin Plan
Nitrate-nitrogen	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Un-Ioned Ammonia	mg/L	0.025 mg/L as N Annual Median	SFRWQCB Basin Plan
Total Kjeldahl Nitrogen	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Total Nitrogen	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Total Phosphorus	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Total Dissolved Solids	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Oil and Grease	mg/L	Concentrations that result in a visible film or coating on the surface of the water or on objects in the water	SFRWQCB Basin Plan
Chloride	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Sulfate	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Boron	mg/L	Concentrations that adversely affect beneficial uses	SFRWQCB Basin Plan
Sodium	Percent	Concentrations that adversely affect beneficial uses, particularly fish migration and estuarine habitat	SFRWQCB Basin Plan
PH	pH units	Between 6.5 and 8.5	SFRWQCB Basin Plan
Color	Platinum cobalt Unit mean of monthly means	Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.	SFRWQCB Basin Plan
Temperature	Increase	Change that adversely affects beneficial uses; an increase by more than 5°F (2.8°C) above natural receiving water temperature	SFRWQCB Basin Plan

**Table 4.D-2**

## Evaluation Criteria with Points of Significance – Surface Water Quality

Evaluation Criteria	As Measured by	Point of Significance	Justification
Dissolved Oxygen	Percent saturation mg/L	Not less than 7.0 mg/L- Cold Water Not less than 5.0 mg/L-Warm Water	SFRWQCB Basin Plan
Species Composition	Change	10%	SFRWQCB Basin Plan
Taste and odor	Change	Change that adversely affects beneficial uses	SFRWQCB Basin Plan
Turbidity	Increase above mean of monthly means	Levels that adversely affect beneficial uses; not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.	SFRWQCB Basin Plan
Diazinon	ng/L	Exceedance of the 100 ng/L as a one-hour average	SFRWQCB TMDL for Walnut Creek/Moraga Creek and Tributaries

Source: HBA 2007

<sup>1</sup> MPN is Most Probable Number

Groundwater quality objectives outlined in the SFRWCQB Basin Plan consist primarily of narrative objectives that are combined with a limited number of numerical objectives. The SFRWQCB, additionally, retains the authority to establish basin-level and/or site-specific numerical groundwater objectives as necessary. The primary groundwater objective is the maintenance of existing high quality of groundwater or background levels.

Groundwater parameters regulated by the SFRWQCB include bacteria, organic and inorganic chemical constituents (total nitrogen is of particular concern), radioactivity, and taste and odor. The Basin Plan states,

“At a minimum, groundwater shall not contain concentrations of bacteria, chemical constituents, radioactivity, or substances producing taste and odor in excess of the objectives described below unless naturally occurring concentrations are greater” (SFRWQCB 2006).

The SFRWQCB, under existing law, regulates waste discharges to land that could affect water quality, including both groundwater and surface water quality. Waste discharges that reach groundwater are regulated to protect both groundwater and any surface water in continuity with groundwater. Waste discharges that affect

groundwater that is in continuity with surface water cannot cause violations of any applicable surface water standards.

#### 4.D-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.D-3 presents potential impacts to hydrology, surface water and groundwater, outlines points of significance, level of impact and type of impact and also ranks the level of significance for the Proposed Project and Alternatives.

**Table 4.D-3**

##### Hydrology, Surface Water Quality, and Groundwater Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
4.D-1. Will the Project degrade surface water quality or violate any water quality standards or waste discharge requirements?	Exceeds numeric or narrative criterion	C, P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) ● Alternative 2 (339 Unit Alternative- GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎
4.D-2. Will the Project substantially deplete groundwater supplies or interfere with groundwater recharge?	Net Decrease in aquifer volume or net lowering of water table	P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) ● Alternative 2 (339 Unit Alternative- GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎
4.D-3. Will the Project substantially alter existing drainage patterns resulting in substantial erosion, sedimentation, or flooding in new areas, or alter storm runoff such that storm drainage capacity would be exceeded?	Net increase in peak storm runoff	C, P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative (GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎
4.D-4. Will the Project expose people or structures to inundation by seiche, tsunami or mudflow?	New Structures located in subject areas	P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 5 (560 Unit Alternative) ◎

**Table 4.D-3**

## Hydrology, Surface Water Quality, and Groundwater Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
4.D-5. Will the Project expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of the failure or a levee or dam?	New structures located below levee or dam	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==
4.D-6. Will the Project place structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	New structures located in a flood zone	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative- GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.D-7. Will the Project expose people or structures to increased potential for flooding, bank erosion and/or sedimentation?	Increase greater than 0 cfs/acre	C, P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) ● Alternative 2 (339 Unit Alternative- GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.D-8. Will construction of the Project result in degradation of surface water quality?	Greater than 0 cfs runoff leaving project site	C	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative- GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖

Source: HBA 2008

1. C: Construction P: Permanent

2. Level of Significance Codes

-- Not applicable

● Significant impact before and after mitigation

== No impact

○ Significant impact; less than significant after mitigation

○ Less than significant impact; no mitigation proposed

**IMPACT:** **4.D-1. Will the Project degrade surface or groundwater water quality or violate any water quality standards or waste discharge requirements?**

**Analysis:** *Potentially Significant Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the Town of Moraga will remain in its current condition with no change to existing runoff rates or drainage patterns. Because the site is disturbed with some slopes denuded of vegetation, there is ongoing erosion associated with periods of elevated runoff from compacted slopes. This runoff contributes to stream bank erosion in the MCSP area and sedimentation in channels downstream from the project area. As a result, surface water quality could be degraded and water quality standards may be violated. Alternative 1 (No Project) could result in increased potential for bank erosion and/or sedimentation in channels downstream in addition to reduced water quality.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Water quality impacts are short-term, typically associated with project construction (discussed under impact 4.D-8), and long-term, typically associated with daily runoff. Degradation of water quality is attributable to runoff from roadways and other impervious surfaces, erosion from unstable slopes, and residential-related pollutant contributions such as excessive lawn fertilization and irrigation. As a result, contaminant (oil and grease, hydrocarbons, herbicides, pesticides, metals, soil particles, and biological nutrients) loads could increase in local runoff. The TMDL for diazinon adopted for Moraga Creek also applies to its tributaries and includes Laguna Creek. Diazinon is a restricted-use pesticide.

Development will occur under the Proposed Project and all Action Alternatives as lands graded and then covered by impervious surfaces, including new roads, structures, parking lots and driveways. Unaddressed, runoff from impervious surfaces presents potential long-term impacts to water quality. Impervious surfaces will increase both the volume and rate of storm runoff. This increased runoff could impact existing drainages and degrade water quality in Laguna Creek.

Projects that exceed 10,000 square feet in size must comply with Town of Moraga Ordinance and Program NPDES permit C.3 provisions as a mechanism to regulate release of contaminants to surface water. Additionally, most of the land of the Town of Moraga drains to Upper San Leandro Reservoir (USLR) via Moraga, Laguna, Lower Larch, and Indian Creeks (Moraga General Plan EIR 2002). Because USLR is a drinking water supply, EBMUD has requested that future development in the Town be managed so as to control storm water contaminants.

**Mitigation: 4.D-1a. Develop and Implement a Master Drainage Plan**

As stated in the 2002 Moraga General Plan EIR, site runoff and drainage control measures for development projects are required to be prepared by California licensed engineering professionals and are reviewed and approved by the Town Engineer prior to issuance of grading and building permits. Consistent with Public Safety Policies PS5.1 – PS5.7, the Town Engineer implements the Flood Control Ordinance, Streambank Repair Ordinance, and Stream Channel Standards. Additionally, the following mitigation measures will be implemented to address related water quality, stormwater runoff and flooding impacts:

- The Town of Moraga and its contractor shall prepare and implement a Master Drainage Plan based upon the final development plan (which shall identify impervious surfaces, defined collection systems, retention basins and outlets, and best management practices-BMPs). The plan shall be prepared by a registered Civil Engineer (or appropriate licensed professional) and reviewed and approved by the Town engineer. The plan will install suitable storm drainage control system and permanent landscaping shall be provided as part of the construction and ongoing operation of the project to capture and infiltrate runoff.
- For new development areas, drainage courses shall be placed in common areas or drainage easements to facilitate maintenance.
- Limit and minimize the development footprint and associated disturbance.
- Establish Joint Maintenance Agreements among the property owners to assure that drainage and runoff detention facilities are maintained after construction.
- Runoff detention basins and drainage plans shall be designed to regulate development peak flows to below pre-project levels.
- Development projects shall be required to contribute to off-site (downstream) mitigation measures such as creek bank stabilization where erosion, incision, and flooding impacts already exist.
- Install suitable storm drainage control system and permanent landscaping. These shall be provided as part of the construction and ongoing operation of the project to capture and infiltrate runoff.
- The plan shall conform to the SFWQCB's general construction and the Contra Costa Clean Water Program NPDES permits for stormwater discharge, including SWPPP and Provision C.3.
- The project shall include recharge-contaminant interceptors as part of the SWPPP.

- Prepare street cleaning and maintenance program for on-site roads and parking areas.
- Prepare a storm drain education program that includes labeling, strict limitation of fertilizers and pesticides and prohibits regular washing or maintenance of vehicles in paved areas that drain directly to storm drains.

#### **4.D-1b. Develop and Implement Laguna Creek Greenway Protection, Maintenance and Monitoring Program**

The design goals will address reversal of channel incision, stabilization of eroding banks, removal of artificial rip-rap bank protection and preservation and restoration of native riparian vegetation. As part of the program, locally native trees, shrubs and grasses will be planted and maintained for three years until established.

The program will include the following elements:

- Protect, manage and monitor the 16.8 acres of riparian habitat area along Laguna Creek during MCSP development in proximity of the Creek.
- Develop and Implement a Citizen Education and Monitoring Program, as an extension of the Upper San Leandro Creek Watershed Program.
- Protect slopes and banks;
- Establish minimum development setbacks in accordance with Contra Costa County Code 914-14.006 “Open channels--Minimum widths of easements”;
- Remove debris and reconstruct streambanks;
- Stabilize current encroachment and prohibit new development within the Laguna Creek channel.
- Design bike and pedestrian trails with designated access points to Laguna Creek to provide for bank protection.
- Adequately size bridges as to not alter flows for the 100 and 500-year storm.

#### **After**

**Mitigation:** *Significant Impact; Alternative 1 (No Project)*

Because no development would occur under Alternative 1 (No Project), the potentially significant impact would remain significant.

*Less Than Significant; Proposed Project and All Action Alternatives*

Implementation of Mitigation Measures 4.D-1a and 4.D-1b will reduce the potential impact to water quality to less than significant. The Master Drainage Plan will provide for the capture and infiltration of runoff from the project area, and combined with implementation of the Laguna Creek Protection, Maintenance and Monitoring Program, pollutants entering Laguna Creek will be minimized to the extent practicable.

**IMPACT: 4.D-2. Will the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge?**

**Analysis:** *Significant Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the MCSP area will remain in the existing condition, no new construction will occur and no new impacts to hydrology, surface water or groundwater will result based on evaluation criteria 2. However, existing impacts to groundwater supplies and recharge from impervious surfaces and compacted urban areas will continue under the No Project Alternative.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Groundwater recharge is driven by infiltration of rainfall, and groundwater and supports base flows in Moraga Creek and Laguna Creek. The Proposed Project and all Action Alternatives may deplete groundwater supplies or interfere with groundwater recharge due to construction of new impervious surfaces.

The commercial center of the project area is existing impervious surface and compacted urban area. Redevelopment of the commercial center is similar for Proposed Project and all Action Alternatives. Residential development for each of the Action Alternatives, sited primarily on lands that are currently fallow orchard, differs according to density of dwelling units per acre and total area designated as open space or residential land uses. Impacts from impervious surfaces associated with residential development for each of the alternatives would be similar and would vary according to clustering, required grading of 10-30% slopes and final layout. The Proposed Project and all Action Alternatives will maintain as undeveloped lands 16.8 acres of central coast live oak riparian woodlands in a corridor along Laguna Creek and its tributaries. Alternative 3 (400 units) and Alternative 4 (560 units) would reduce the amount of new coverage placed in the fallow orchards adjacent to Laguna Creek because fewer medium to high density housing units would be built than under the Proposed Project.

The Proposed Project and all Action Alternatives could increase groundwater recharge as a result of irrigation of lawns and infiltration of surface waters captured in stormwater drainage systems.

**Mitigation:** **4.D-2a. Demonstrate that existing springs and seeps are not dependent on the recharge from the project area.**

As part of the Drainage Plan (Mitigation Measure 4.D-1a) reviewed and approved by the Town of Moraga, seeps and springs found in the project area shall be demonstrated to be independent of rainfall infiltration and local groundwater recharge. However, if seeps and springs are found to be dependent on recharge, additional mitigation described in Measure 4.D-2b shall be conducted and additional review by the Town of Moraga will be necessary.

**4.D-2b. Capture and Infiltrate Runoff**

To mitigate potential impacts to groundwater supplies and recharge, runoff from impervious surfaces shall be captured and infiltrated. The stormwater drainage systems and retention/recharge basins shall be designed as part of the Master Drainage Plan (Mitigation Measure 4.D-1a) and shall calculate the amount of groundwater recharge and runoff infiltration necessary to support seeps and springs.

**After****Mitigation:** *Significant Impact; Alternative 1 (No Project)*

No mitigation is possible under the No Project Alternative. Existing impacts to groundwater supplies and recharge would remain.

*Less than Significant; Proposed Project and All Action Alternatives*

Impacts to groundwater supplies or recharge will be mitigated through implementation of Mitigation Measures 4.D-2a and 4.D-2b. Through clustering of development, maintenance of undeveloped areas along Laguna Creek or in adjacent fallow orchards, and capturing and infiltrating of storm water and irrigation runoff, the Proposed Project and all Action Alternatives will not substantially deplete groundwater supplies or interfere with recharge such that there will be a net deficit in aquifer volume or a lowering of the local groundwater table level. The Proposed Project and all Action Alternatives will not impact the production rate of existing nearby wells in such a way that existing or planned land uses would not be supported.

**IMPACT:** **4.D-3. Will the Project substantially alter existing drainage patterns resulting in substantial erosion, sedimentation, or flooding in new areas, or alter storm runoff such that storm drainage capacity would be exceeded?****Analysis:** *No Impact; Alternative 1 (No Project)*

Under the No Project Alternative the Project area will remain in the existing condition, no new construction will occur and no new impacts to hydrology, surface water or groundwater will result based on evaluation criteria 3.

*Significant Impact; Proposed Project and All Action Alternatives*

Construction of buildings and infrastructure will alter existing drainage patterns and may result in substantial erosion, sedimentation or flooding. Runoff from additional impervious surface proposed under the Proposed Project and all Action Alternatives has may exceed storm drainage capacity if peak flows are increased. Local erosion, gullying, and streambank erosion may increase due to concentrated street and lot flows replacing existing diffused overland flow.

There is a general erosion and flooding problem along streams in Moraga because stream locations have shifted, depths have increased, and the rate of storm runoff has increased (Town of Moraga 2006). Several watersheds with historic drainage problems have been identified through the review of existing reports and discussions with the Town Engineer and Town Planning Department.

**Mitigation: 4.D-3. Determine Peak Flows due to Development and Reduce Peak Flows to Below Pre-Project Conditions**

The Contra Costa Clean Water Program “C.3” provision contains enhanced performance standards to address post-construction and some construction phase impacts from new and redevelopment projects. The “C.3” requirements are separate from, and in addition to, requirements for erosion and sediment control and for pollution prevention measures during construction as addressed in the state general construction permit.

The provision outlines the following:

- Project site designs must minimize the area of new roofs and paving and use pervious surfaces where feasible so that runoff can percolate to the underlying soil;
- Capture and treat runoff from impervious surfaces using adequately sized treatment devices prior to discharge into streams;
- Determine net increase to off site peak flow volumes and durations as part of the Master Drainage Plan (Mitigation Measure 4.D-1a) based upon the final development plans. The final development plans shall identify impervious surfaces, define the collection systems, detention basins and outlets, and detail BMPs.
- Determine, detain and infiltrate runoff so that peak flows and duration match pre-project conditions.

In addition, project applicants must prepare plans and execute agreements to ensure the stormwater treatment and flow-control facilities are maintained in perpetuity.

**After**

**Mitigation:** *No Impact; Alternative 1 (No Project)*

*Less than Significant; Proposed Project and All Action Alternatives*

Implementation of the Mitigation Measure 4.D-3 and compliance with federal, state and local ordinances and provisions will ensure that storm drainage capacity would not be exceeded and potential impacts are reduced to a less than significant level.

**IMPACT:** **4.D-4. Will the Project expose people or structures to inundation by seiche, tsunami, or mudflow?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

The MCSP area is not near any waterbody capable of causing a seiche or tsunami and the flat to gentle slopes are not susceptible to mudflows. Therefore, the MCSP area is not currently exposed, nor will the Proposed Project and all Action Alternatives expose people or structures to a risk of loss, injury or death involving seiche, tsunami, or mudflows.

**Mitigation:** No mitigation is required.

**IMPACT:** **4.D-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

The project area is not located downstream from a levee or dam. Therefore, the MCSP is not currently exposed, nor will the Proposed Project and all Alternatives expose people or structures to a risk of loss, injury or death involving flooding as a result of dam or levee failure.

**Mitigation:** No mitigation is required.

**IMPACT:** **4.D-6. Will the Project place structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

*Less than Significant; Proposed Project and All Action Alternatives*

According to FEMA flood map number 0606370004A, a 16.8-acre corridor along Laguna Creek and its tributaries are within the 100-year flood hazard area. The streams are mapped zone A4 and the undeveloped acreage is mapped zone C. Under Alternative 1 (No Project), the MCSP area will remain in the existing undeveloped condition, no new structures will be developed within the floodplain.

The Proposed Project and all Action Alternatives include maintaining as undeveloped 16.8 acres along Laguna Creek that corresponds to the mapped flood zone and excludes any buildings. Development within the

100-year flood zone will be limited to a roadway crossing and bike/pedestrian trail and bridge footings. As required by existing regulations, the roadway crossing and trail and bridge structures will be designed to not impede or redirect stream flow.

**Mitigation:** No mitigation is required.

**IMPACT:** **4.D-7. Will the Project expose people or structures to increased potential for flooding, bank erosion and/or sedimentation?**

**Analysis:** *Significant Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the MCSP area will remain in its current condition with no change to existing runoff rates or drainage patterns. Because the site is disturbed and lacking adequately sized drainage systems, there is ongoing gullying and stream bank erosion associated with periods of elevated runoff from compacted slopes and impervious surfaces. This runoff contributes to sedimentation in channels downstream from the project area. As a result, runoff from the MCSP area may degrade water quality and contribute to violations of water quality standards. The No Project Alternative may result in continued exposure of people and structures to flooding, bank erosion and/or sedimentation in channels downstream.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

The CCCFCWCD has concerns that new development within the Town may increase flooding and stream bank erosion. Many streams have shifted channels and affected property lines and have incised channels with active bank erosion. Areas subject to storm flooding have increased as a result of increased surface runoff from expansion of impervious surface area. Development under the Proposed Project and all Action Alternatives may increase the frequency and severity of downstream flooding, which could impact the stability of roads, structures, and existing drainages.

The CCCFCWCD currently assists with review of development plans and designs but has no jurisdiction to implement flood protection improvements or perform drainage maintenance within the Town. However, as part of the NPDES permit and associated SWPPP, the Proposed Project and all Action Alternatives are required to retain runoff and release flows such that downstream flooding, bank erosion and/or sedimentation are not increased. Net peak flows are required to be less than the existing conditions.

Potentially significant impacts to drainage include:

- Increase in runoff volumes due to increases of impervious surfaces (roofs, driveways, streets, parking lots);
- Increase in initial peak flows due to rapid collection and discharge from impervious surfaces;

- Increase in storm runoff flow and volume to Laguna and Moraga Creeks;
- Potential local erosion and gullying due to concentrated street and lot runoff replacing current diffuse overland flow; and
- Increased velocity and stage of Laguna Creek.

The Proposed Project and all Action Alternatives will be designed to mitigate post-project downstream impacts from increases in runoff. The Town of Moraga and Contra Costa Flood Control Standards require structural detention controls for the 2-year and 100-year peak flow events. Concentrated street and lot runoff flows will replace currently diffuse overland flow and could exacerbate local erosion if not captured and infiltrated. Runoff will be addressed in the Master Drainage Plan.

In addition to Mitigation Measure 4.I-4, *Implement runoff and drainage control measures*, that is outlined in the 2002 Moraga General Plan EIR, the following mitigation measures will reduce potential impacts to a less than significant level.

**Mitigation: 4.D-1b. Develop and Implement Laguna Creek Greenway Protection, Maintenance and Monitoring Program**

**4.D-3. Determine Peak Flows due to Development and Reduce Peak Flows to Below Pre-Project Conditions**

**After**

**Mitigation:** *Significant Impact; Alternative 1 (No Project)*

Under the No Project Alternative, no mitigation is possible, and ongoing impacts in the MCSP area will remain significant.

*Less than Significant; Proposed Project and All Action Alternatives*

Implementation of Mitigation Measures 4.D-3 and 4.D-1b will ensure that peak flows are not increased and that Laguna Creek is adequately buffered and protected from further disturbance. As a result, potential impacts will be reduced to less than significant.

**IMPACT: 4.D-8. Will construction of the Project result in degradation of surface water quality?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Under Alternative 1 (No Project) the Project area will remain in the existing condition, no new construction will occur and no new impacts to hydrology, surface water or groundwater will result based on evaluation criteria 8.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Compliance with local and state storm water quality regulations is required. These regulations require implementation of best management

practices that effectively control runoff from leaving the project area during construction. The appropriate construction BMPs will be identified and illustrated on project design plans in conformance to the SFRWQCB's general permit for storm water discharge under the NPDES, including Provision C.3 (Contra Costa County) and SWPPP. Proper and prudent maintenance of BMPs is necessary and required.

Major subdivisions and increased infill development contribute increments of contaminants (oil and grease, hydrocarbons, herbicides, pesticides, metals, soil particles, and biological nutrients) to local runoff and stream water. Projects exceeding 10,000 square feet must comply with the Contra Costa Clean Water Program NPDES permit as a mechanism to regulate release of contaminants to surface water. Most of the land of the Town of Moraga drains to Upper San Leandro Reservoir (USLR) via Moraga, Laguna, Lower Larch, and Indian Creeks. Because USLR is a drinking water supply, EBMUD has requested that future development in the Town be managed so as to control storm water contaminants (Moraga General Plan EIR 2002).

**Mitigation: 4.D-8: Implement water quality standards and best management practices.**

The measures designed as part of Mitigation Measure 4.D-1a, Develop and Implement a Master Drainage Plan, (detention basins, drainage controls, slope stabilizers, etc.) also serve to retain and control pollutants and particulate matter produced by development. The Town Engineer shall set runoff water quality standards in cooperation with EBMUD, develop standard mitigation measures and best management practices for developments during construction and post-completion, and initiate water quality monitoring at key stream and discharge points to assure compliance.

**After**

**Mitigation: No Impact; Alternative 1 (No Project)**

Under Alternative 1 (No Project), no construction will occur and no impacts will result.

*Less than Significant; Proposed Project and All Action Alternatives*

Water quality monitoring and installation and maintenance of construction BMPs for slope stability and control of storm water runoff will decrease potential impacts to less than significant levels.

## 4.D-4 CUMULATIVE IMPACTS

There are potential Project impacts – both significant and less than significant – on hydrology, surface and ground water quality criteria. The significance criteria (i.e., the exceedance of numeric or narrative criteria at specified locations) consider cumulative impacts on the bodies of water, and combined with the proposed mitigation measures along with compliance with NPDES permits and requirements, no cumulative project impacts will result for the Proposed Project or all Action Alternatives. The impacts on hydrology, surface and ground water quality under Alternative 1 – the No Project Alternative – cannot be mitigated and therefore will continue to contribute to cumulative impacts.

The Moraga Creek and Laguna Creek watersheds experience occasional flooding. The Master Drainage Plan and Laguna Creek Plan shall include measures that will preclude any adverse impacts to peak flows and ensure there is no project-related cumulative contribution to flooding. The Project, with mitigation measures incorporated, will not contribute to the degradation of water quality. Any project contribution will be mitigated through the implementation of required project measures, BMPs (which will be included in the State required NPDES permit and SWPPP and in the Master Drainage Plan) and additional mitigation measures. Site conditions will be retrofitted and improved. Potential project-related hydrological impacts will be improved to better than existing conditions, be considered as having less than significant impacts, and are therefore not considered to be cumulative.

## 4.D-5 PREPARERS AND REFERENCES

### Preparers

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### Reviewers

Rob Brueck and Trevor A. Burwell, Ph.D., Hauge Brueck Associates

### References

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## 4.E OPEN SPACE, VISUAL RESOURCES, AND RECREATION

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This section addresses the open space, visual resources, and recreation constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. The setting section provides information on the visual characteristics of the area, designated open space areas in comparison to undeveloped land, and the existing and proposed recreational opportunities in and near the MCSP area. The possible visual impacts of proposed development are evaluated from the perspective of public views directly adjacent to the site and from nearby ridgelines.

### 4.E-1 ENVIRONMENTAL SETTING

#### Visual Character

The MCSP area contains a mixture of former agricultural areas and undeveloped properties interspersed with existing residential and commercial uses in the center of the Town of Moraga. Specifically, the area is bound to the north by residential development and to the east by the Moraga Commons Park as well as additional residential development. Residential development also abuts the southern and western boundaries of the area. The existing Moraga Center commercial complex includes retail and service facilities such as offices, financial institutions, and auto service stations; there is also a significant cluster of senior housing in the area. Moraga Ranch is located in the central portion of the site adjacent to Laguna Creek and contains offices and other retail/commercial uses along with barns and other ranch style structures that reflect the original use of the site. The principal roads serving the Town, Moraga Road and Moraga Way, intersect the MCSP area.

The MCSP area consists of two distinct landscape types:

- A rural landscape with remnants of the original agricultural activities that took place on the "Ranch", and open land in the foothills west and east of the Town Center that has not been developed; and
- An urban landscape of retail and commercial uses, primary circulation routes, and clustered housing.

The rural landscape of the former orchards, Laguna Creek riparian corridor, and disturbed grassland hillsides provide an aesthetic contrast to the urban pockets of the Town and add to the natural character within scenic corridors.

The western and northern portion of the area is characterized by former orchard area associated with the Moraga Ranch. This area is bound by single family housing along Camino Ricardo, reflecting the ranch and Spanish-style architecture of the Town. There are also some commercial uses in this area, particularly an auto service station. Laguna

Creek and its tributaries are located in the northern and central portion of the site separating the orchard from the mixed-use commercial area of the Ranch.

The southern portion of the area is characterized by commercial and office uses, including religious and educational facilities, dental and medical offices, multifamily housing and two senior housing developments – Aegis and Moraga Royale.

The Central and eastern portions of the area contain retail and mixed-use commercial areas, interspersed with undeveloped in-fill properties. Architectural styles primarily reflect the Spanish-style influence typical in the Town; however some retail and commercial structures either reflect the rural ranch architecture or reflect a commercial utilitarian style. Services in this area include Safeway and Orchard Supply stores, smaller retail, restaurants, auto service stations, financial institutions, a plant nursery, preschool, and other offices.

### **Views from Public Roads**

Since the MCSP area is located within a valley of surrounding hills, the visual character of the 187-acre area varies from different viewpoints in the Town of Moraga. Views of the Town Center from area ridgelines and hillsides include a mixture of residential, commercial, retail, and riparian/orchard characteristics. Undulating topography within the MCSP hides portions of the site behind existing buildings, trees, and slopes, affording different views from within and adjacent to the MCSP boundary. For example, commercial developments clearly visible from viewsheds at the eastern boundary of the site are undetected from western viewsheds. The following figures show the site from nine viewpoints shown in Figure 4.E-1.

- Figure 4.E-2 – Alta Mesa Drive
- Figure 4.E-3 – Moraga Road and Moraga Way
- Figure 4.E-4 – Moraga Commons
- Figure 4.E-5 – Camino Ricardo
- Figure 4.E-6 – Moraga Way
- Figure 4.E-7 – School Street Facing Moraga Ranch
- Figure 4.E-8 – Moraga Road
- Figure 4.E-9 – School Street Facing Northeast
- Figure 4.E-10 – Village West of Laguna Creek

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**Figure 4.E-1. – Viewshed Overview Map**



**TOWN OF MORAGA SPECIFIC PLAN  
VIEW LOCATOR**

Moraga Center Specific Plan Scenic Simulations

**DIGITAL IMAGING STUDIO AT DAHLIN GROUP**

**Figure 4.E-1  
Viewpoint Locations**

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**Figure 4.E-2. – Alta Mesa Drive Viewshed**



**VIEW-01 EXISTING**

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**VIEW-01 PROPOSED**

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**Figure 4.E-3 – Moraga Road and Moraga Way Viewshed**



**VIEW-02 EXISTING**

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**VIEW-02 PROPOSED**

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**Figure 4.E-4. – Moraga Commons Viewshed**



**VIEW-03 EXISTING**



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**VIEW-03 PROPOSED**



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**Figure 4.E-5. – Camino Ricardo Viewshed**



**VIEW-04 EXISTING**

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**VIEW-04 PROPOSED**

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**Figure 4.E-6. – Moraga Way Viewshed**



**VIEW-05 EXISTING**



**DIGITAL IMAGING STUDIO AT DAHLIN GROUP**



**VIEW-05 PROPOSED**



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**Figure 4.E-7. – School Street Facing Moraga Ranch Viewshed**



**VIEW-06 EXISTING**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP



**VIEW-06 PROPOSED**



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**Figure 4.E-8. – Moraga Road Viewshed**



**VIEW-07 EXISTING**



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**VIEW-07 PROPOSED**



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**Figure 4.E-9 – School Street Facing Northeast Viewshed**



**VIEW-08 EXISTING**



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**VIEW-08 PROPOSED**

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**Figure 4.E-10 – Village West of Laguna Creek Viewshed**



**VIEW-09 EXISTING**



DIGITAL IMAGING STUDIO AT DAHLIN GROUP



**VIEW-09 PROPOSED**

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## Designated Scenic Corridors

The Town of Moraga has designated the following scenic corridors within the General Plan and Municipal Code to strengthen community identity and reflect Moraga's semi-rural character: St. Mary's Road, Canyon Road, Moraga Way, Moraga Road, Rheem Boulevard, Camino Pablo, Bollinger Canyon Road, and Donald Drive along the ridgeline of Mulholland Hill. Of these scenic corridors, three are within the MCSP area, including Moraga Way, Moraga Road, and Canyon Road. In addition, the MCSP area can be seen from St. Mary's Road at its intersection with Moraga Road. Land within 500 feet of these corridors is subject to the regulations of Chapter 8.132 of the Municipal Code and developments and structural changes are subject to approval by the Design Review Board. In general, new developments should retain existing topography and vegetation, include adequate setbacks, enhance scenic views, create gateways with landscaping and signage, and be compatible with surrounding landscapes and developments through the use of street trees, orchard tree preservation, and pedestrian lighting.

## Open Space

There are no existing dedicated open space lands within the MCSP area. There are undeveloped properties within the project area and areas formerly used for agricultural use, particularly the orchard on the northwestern and southeastern portions of the site. Laguna Creek also runs through the area and remains undeveloped, providing habitat and flood control in the area.

Non-designated open space lands within the MCSP can be characterized as former orchard, hillside, riparian corridor and undeveloped land. The former orchard areas are located between Laguna Creek and Camino Ricardo and east of Moraga Road. In these areas, walnut trees were formerly farmed and are currently left fallow with the exception of seasonal disking for weed control. In some areas where disking is not feasible, native oaks and other vegetation have repopulated portions of the area. Two vacant hillside areas are located east of the orchard area and east of Moraga Road. The northern area contains steeper slopes and disturbed grassland. Although it has little habitat value, the hillside is highly visible from the scenic corridor of Moraga Road. The southern area consists of former orchards, similar to the undeveloped lands north of Laguna Creek. The riparian corridor is located in the central portion of the MCSP and consists of Laguna Creek, its tributaries, and the riparian habitat surrounding the creek banks. Although not highly visible outside the MCSP area due to the undulating topography, this area affords the greatest habitat value for plant and animal species and represents the native vegetation of the Town. Pockets of undeveloped land of varying sizes are located in the central and southern portions of the site. The undeveloped lands are surrounded by commercial, retail, and residential land uses and are considered in-fill sites as opposed to potential open space.

There are over 2,000 acres of open space areas beyond the MCSP area within the Town of Moraga, primarily located in the north, southeast, and southwest corners of the Town. The open space land use designation is used on major ridgelines or areas prone to geological or hydrological hazards. The General Plan identifies some parcels as Open

Space (OS) and others as MOSO Open Space (OS-M), subject to the Moraga Open Space Ordinance. Most of the open space lands in the Town of Moraga are privately owned.

## **Parks and Recreational Resources**

### ***Parks***

There are no existing dedicated parks in the MCSP area; however, Moraga Commons Park is located on 40.2 acres adjacent to the northeastern boundary of the area (Moraga Parks and Recreation Master Plan, 2007). The Moraga Commons Park offers a variety of passive and active recreation areas and is the site of seasonal outdoor performances. Amenities within Moraga Commons Park include picnic areas, amphitheater, tot lots, water features, swings, sand volleyball courts, disc golf, horseshoe pits, bocce ball courts, basketball half courts, and the Lamorinda Skatepark.

The Town of Moraga currently manages 57.5 acres of developed parks throughout the town (Moraga Commons, Rancho Laguna, and Hacienda de las Flores) and 250 acres of preserved natural areas in the Mullholand Open Space Preserve (Moraga Parks and Recreation Master Plan, 2007)

### ***Trails***

A segment of the Lafayette-Moraga Regional Trail, operated by the East Bay Regional Park District, is located within the MCSP area. This trail is intended for hiking, bicycling, and equestrian use. The trail winds from north to south, beginning at the Olympic Boulevard trail staging point in Lafayette and ending to the south at the Valle Vista trail staging point that is managed by the EBMUD. Within the MCSP area, the trail passes along the Moraga Commons Park and roughly follows along the School Street corridor. There are no trail markers in the MCSP area, nor any other trail improvements of a recreational nature. Just north of the intersection of School Street and Moraga Way the trail resumes an improved designated path, winding south near Laguna Creek.

## **4.E-2 REGULATORY SETTING**

### **Town of Moraga Zoning and General Plan Goals, Objectives and Policies**

The Moraga 2002 General Plan has numerous goals, objectives and policies addressing open space, visual resources, and recreation. The applicable goals, objectives and policies are listed below.

#### **Goal OS1. Open Space Preservation.**

**Policy OS1.1. Open Space Preservation.** Preserve open space to the maximum extent possible, using tools such as acquisition, lease, dedication, easements, donations, regulation or tax incentive programs.

**Goal OS2. Environmental Quality.**

Policy OS2.8 Tree Preservation. Preserve and protect trees wherever they are located in the community as they contribute to the beauty and environmental quality of the Town.

Policy OS2.9 Tree-covered Areas. Preserve or substantially maintain in their present form certain tree-covered areas, especially with respect to their value as wildlife habitats, even if development in those areas is permitted. Give preference to the retention of original growth over replanting. These areas include, but are not limited to:

- Mulholland Hill (both northeast and southwest slopes)
- Indian Ridge
- Bollinger Canyon
- Sanders Ranch properties
- St. Mary's Road northeast of Bollinger Canyon Road
- The "Black Forest" area located northerly of the terminus of Camino Ricardo
- Coyote Gulch west of St. Mary's Road, to the north
- Wooded area to the east and south of St. Mary's Gardens
- Wooded area behind Donald Rheem School
- Wooded area on the ridge south of Sanders Drive

**Goal LU1. Residential.**

Policy LU1.9 Cluster Housing to Protect Open Space. Provide for the permanent preservation of open space by allowing clustered housing designs in areas designated MOSO Open Space or Non-MOSO Open Space or Residential on the General Plan Diagram. However, do not place cluster housing in locations that are visually prominent from the scenic corridor or where it would adversely impact existing residential areas.

**Goal CD1. Natural Setting.**

Policy CD1.1 Location of New Development. To the extent possible, concentrate new development in areas that are least sensitive in terms of environmental and visual resources, including:

- Areas of flat or gently sloping topography outside of flood plain or natural drainage areas.
- The Moraga Center area and Rheem Park area.
- Infill parcels in areas of existing development.

Policy CD1.3 View Protection. Protect important elements of the natural setting to maintain the Town's semi-rural character. Give particular attention to viewsheds along the Town's scenic corridors, protecting ridgelines, hillside areas, mature native tree groupings, and other significant natural features. Consideration should be given to views both from within the Town and from adjacent jurisdictions. Likewise, the Town should work with adjacent jurisdictions views from Moraga to adjacent areas.

**Policy CD1.5 Ridgelines and Hillside Areas.** Protect ridgelines from development. In hillside areas, require new developments to conform to the site's natural setting, retaining the character of existing landforms preserving significant native vegetation and with respect to ridgelines, encourage location of building sites so that visual impacts are minimized. When grading land with an average slope of 20% or more, require 'natural contour' grading to minimize soil displacement and use of retainer walls. Design buildings and other improvements in accordance with the natural setting, maintaining a low profile and providing dense native landscaping the natural setting.

**Policy CD1.6 Vegetation.** Emphasize and complement existing mature tree groupings by planting additional trees of similar species at Town entries, along major street corridors, in and around commercial centers, in areas of new development, and along drainageways. Encourage the resistive, and drought-tolerant species.

#### **Goal CD4. Single Family Neighborhoods.**

**Policy CD4.4 New Residential Developments.** Design new single family developments to create high quality pedestrian environments with pathways to adjacent neighborhoods and, where feasible, commercial areas. Ensure that the layout of new residential lots respect the site topography and natural features. Where feasible, avoid standard repetitive lot sizes and shapes in hillside areas.

#### **Goal FS3. Parks and Recreation.**

**Policy FS3.2 Parks and Recreation Facilities in New Developments.** Ensure that adequate recreation facilities are provided in areas of new residential development as a condition of development approval. Recreation facilities may include but need not be limited to amenities such as playgrounds, drinking fountains, trails, restrooms, picnic tables, play fields, and natural areas.

**Policy FS3.3 Park Dedication Requirements.** Require residential and business developments to make appropriate provisions for park land dedication, trails, trail easements and/or in-lieu fees as part of the planning and development process. Land and/or facilities provided by the developer can be considered for credit toward the park dedication requirement.

#### **Goal GM1. Growth Management.**

**Policy GM1.5 Other Performance Standards.** Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council.

**Parks.** Five acres of parkland per 1000 residents. *Note: The Town is currently processing an ordinance that would make the goal three acres of parkland per 1000 residents to be consistent with California State Law.*

**Fire.** A fire station within 1.5 miles of all residential and nonresidential development in the Town, in the absence of appropriate mitigation measures.

**Police.** Maintain a three-minute response time for all life-threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.

**Sanitary Facilities.** The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.

**Water.** The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.

**Flood Control.** Containment of the 100-year flood event (as determined by FEMA) by the flood control/drainage system.

### **Town of Moraga Open Space Ordinance**

The Moraga Open Space Ordinance (MOSO), adopted in 1986, defines unsuitable development areas, establishes the OS-M hillside open space land use classification on undeveloped open space lands with slopes greater than 20 percent, and limits development on open space lands to a density of 1 unit per 20 acres unless otherwise approved by the Moraga Planning Commission. The intent of the MOSO is "to protect the remaining open space resources within the Town in the interest of: 1) preserving the feel and character of the community; 2) ensuring the adequacy of recreational opportunities which are contingent on such open spaces; 3) ensuring the protection of local and regional wildlife resources which are dependent on the habitat provided by such open space; 4) ensuring that development does not occur in sensitive view shed areas; 5) protecting the health and safety of the residents of the Town by restricting development on steep or unstable slopes; and 6) ensuring that development within the Town is consistent with the capacity of local and regional streets and other public facilities and does not contribute to the degradation of local or regional air quality" (Moraga Open Space Ordinance Section 2a).

In order for the Moraga Planning Commission to approve development on open space areas at a density greater than one unit per 20 acres (maximum one unit per 5 acres), the following findings must be made:

- The site is physically suitable for the type of development and requested density;
- The development is not likely to cause environmental damage;
- The development is not likely to cause public health problems;
- The distance and relationship to high risk areas is sufficient so that development will not cause undue risk to the subject and surrounding

properties and will not increase risk to the public health, safety, and welfare;

- The dwelling units in the proposed development can be substantially concealed from scenic corridors by vegetation or the terrain;
- Public benefit will result from the dedication of open space lands, trails, or park and recreational facilities beyond those otherwise required for development;
- The distance of development from ridgelines is such that the view of ridgelines from a scenic corridor is protected;
- The project can be built without substantial grading, retaining walls, or hauling of earth material.

### Evaluation Criteria

Table 4.E-1 presents criteria for analysis of open space, visual resources, and recreation impacts.

**Table 4.E-1**

#### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.E-1. Will the Project result in loss of potential public open space?	Development not consistent with existing policies or ordinances relating to open space preservation	Any inconsistency in design, density or scale with policies or ordinances relating to open space preservation	Moraga General Plan Policy OS1.1; Town Zoning Ordinance; MOSO
4.E-2. Will the Project have a substantial adverse effect on a scenic vista or substantially damage scenic resources (e.g., natural landforms, trees, rock outcrops and historic buildings along a scenic highway)?	Physical alteration of landscape or placement of structures in a scenic vista	Substantial modification of a scenic vista as seen from key viewing corridors	CEQA Checklist I(a,b); Moraga General Plan Policies LU1.9, CD1.1, 1.3, 1.5, 1.6, 4.4, and OS2.8 -2.9; Town Zoning Ordinance
4.E-3. Will the Project substantially degrade the existing visual quality of the site and its surroundings?	Physical change to visual quality as seen from key viewing corridors	Substantial degradation of visual quality as seen from key viewing corridors	CEQA Checklist I (c); Moraga General Plan Policies LU1.9, CD1.1, 1.3, 1.5; Town Zoning Ordinance

**Table 4.E-1**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.E-4. Will the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	New source of light and glare	Substantial new affect on day and nighttime views	CEQA Checklist I(d); Moraga General Plan Land Use and Zoning; Town Zoning Ordinance
4.E-5. Will the Project create additional demand for recreation facilities such that new facilities need to be constructed to maintain the existing level of service?	Acres of park land per resident, recreation facilities per resident	Less than 5 acres of park land per 1000 residents	CEQA Guidelines, XIII(a) and XIV (a-b); Moraga General Plan Policies FS3.2-3.3, GM1.5

**4.E-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Table 4.E-2 presents potential open space, visual resources, and recreation impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for open space, visual resource, and recreation conflicts is determined by the location of proposed land uses in proximity to critical viewsheds, residential increases in relation to recreational opportunities, and open space potential. Visual character degradation is the primary open space, visual resource, and recreation concern for all the Alternatives.

**Table 4.E-2**

## Open Space, Visual Resources, and Recreation Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
4.E-1. Will the Project result in loss of potential public open space?	Any inconsistency in design, density or scale with policies or ordinances relating to open space preservation	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

**Table 4.E-2**

## Open Space, Visual Resources, and Recreation Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
4.E-2. Will the Project have a substantial adverse effect on a scenic vista or substantially damage scenic resources (e.g., natural landforms, trees, rock outcrops and historic buildings along a scenic highway)?	Substantial modification of a scenic vista as seen from key viewing corridors	P	Proposed Project ⊗ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊗ Alternative 3 (400 Unit Alternative) ⊗ Alternative 4 (560 Unit Alternative) ⊗
4.E-3. Will the Project substantially degrade the existing visual quality of the site and its surroundings?	Substantial degradation of visual quality as seen from key viewing corridors	P	Proposed Project ⊗ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊗ Alternative 3 (400 Unit Alternative) ⊗ Alternative 4 (560 Unit Alternative) ⊗
4.E-4. Will the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Substantial new affect on day and nighttime views	P	Proposed Project ⊗ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊗ Alternative 3 (400 Unit Alternative) ⊗ Alternative 4 (560 Unit Alternative) ⊗
4.E-5. Will the Project create additional demand for recreation facilities such that new facilities need to be constructed to maintain the existing level of service?	Less than 5 acres of park land per 1000 residents	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) ○ Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

Source: HBA 2008

Notes: 1. Type of Impact:

C Construction



2. Level of Significance:

Significant impact before and after mitigation

P Permanent



Significant impact before mitigation; less than significant impact after mitigation



Less than significant impact; no mitigation proposed



No impact

**Impact:** **4.E-1. Will the Project result in loss of potential public open space?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Action Alternative would not result in any change to the current allocation of open space. Although there is no open space designated by the General Plan within the MCSP area, this alternative would not change that designation or contribute to or detract from open space areas in the Town.

**Analysis:** *Less than Significant; Proposed Project and All Action Alternatives*

There is no open space designated by the General Plan within the MCSP area; however, under each action alternative, the 16.8-acre Laguna Creek riparian corridor would be maintained in a natural state. In addition, portions of the hillside area east of Moraga Road not suitable for development due to steep slopes would remain undeveloped.

Although General Plan policy OS1 requires the Town to preserve as much open space land as possible, the methods for preservation do not identify existing funding and rely on dedication, donations, and tax incentives to obtain open space. In addition, there is no identified need to acquire an established acreage of open space to meet service level requirements. Therefore, the Proposed Project and Action Alternatives serve to further this goal with the establishment of the Laguna Creek riparian corridor.

**Mitigation:** No mitigation is required.

**Impact:** **4.E-2. Will the Project have a substantial adverse effect on a scenic vista or substantially damage scenic resources (e.g., natural landforms, trees, rock outcrops and historic buildings along a scenic highway)?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Action Alternative would not result in any change to current scenic vistas or resources. All scenic resources would retain their existing character, but no revitalization or improvements to existing structures would occur along scenic corridors.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

As described in the Setting, the MCSP area contains three scenic corridors (Moraga Road, Moraga Way, and Canyon Road) as well as undeveloped hillsides, fallow orchards, a rural ranch setting, and the Laguna Creek riparian corridor. The General Plan does not identify significant ridgelines within the MCSP area. There are also existing commercial and retail structures within this area that are actively used and serve as one of the two commercial areas of the Town. Further infill and renovation of the retail and commercial areas would not significantly alter the visual

character from area ridgeline vistas and viewpoints, as shown on Figure 4.E-2. The General Plan indicates that the current strip-mall developments along Canyon Road, Moraga Road, and Moraga Way could be improved to further enhance these scenic corridors.

Figures 4.E-2 through 4.E-10 illustrate visual changes that may occur as a result of the Proposed Project. Four of the figures, Figures 4.E-3, 4.E-, 4.E-6, ad 4.E-8, illustrate the proposed views from the scenic corridors or Moraga Road, Moraga Way, and St. Mary's Road. Views along Moraga Way (Figures 4.E-3 and 4.E-6) primarily show a change in the orchard area, where uniform trees are replaced with housing rooftops and dense, large landscape trees that help hide and integrate the rooftops into the surrounding landscape. Although surrounding ridgelines remain unchanged in Figure 4.E-3, a portion of the ridgeline is obstructed by the proposed office building in Figure 4.E-6. Although most of the ridgeline is still visible, use of setbacks and landscaping are needed.

Figures 4.E-4 (View from St. Mary's Road at Moraga Road) and 4.E-8 (View from Moraga Road at Alta Mesa Drive) show a significant difference in views from these scenic corridors. In both cases, ridgelines are significantly obscured and primarily no longer visible from the roadways. Although the existing views of unused vegetated parcels is dramatically changed through the development of landscaped, yet highly urbanized and visible commercial uses, the greatest difference lies in the loss of ridgeline and hillside views that characterize the Town, resulting in a significant impact to the scenic corridors.

Least affected by the MCSP project would be the view of Moraga Ranch along School Street as shown on Figure 4.E-7. Structures would remain primarily the same, with minor use improvements such as enhanced walkways, street lighting, fencing, and landscaping, being the only significant visual change.

Other views from within the central MCSP area are illustrated on Figures 4.E-9 and 4.E-10. Figure 4.E-9 simulates proposed view changes along the School Street Extension. This view currently does not provide visual interest as it consists of an unimproved road, a cluster of RVs, a dilapidated fence and some landscaping trees. Although the view would significantly change with the development of retail structures, walkways, roadway improvements, and urban landscaping, the view would not be adversely affected. Figure 4.E-10 illustrates the proposed changes from the Village area west of Laguna Creek. The current views of disked land and natural areas would be replaced with highly urbanized views of higher density housing and associated landscaping, visible only from the immediate area within the MCSP.

The development of the residential units on the orchard sites would result in the most significant visual change from surrounding hillside areas as shown in Figure 4.E-2 and from Camino Ricardo as shown in Figure 4.E-

5. Although views of surrounding ridgelines would not be affected by the residential development, the rural and natural character of the orchard would become a more urbanized collage of rooftops interspersed with dense landscaping. This change would be most significant under the Proposed Project and 339-unit Alternative as residences and roadways would completely cover the gentle sloping hillside most visible from the surrounding area and scenic corridors. The 339-unit Alternative would place lower density housing (6 units/acre) on the orchard, but would still utilize all available land for the residences. The Proposed Project would place roadways and dwelling units at densities between 12 and 24 units per acre on this highly visible hillside. Although the residential units may be clustered under the 400-unit and 560-unit Alternatives to maintain larger expanses of vegetation, the volume of development would significantly alter the rural character of the existing undeveloped orchard.

The Proposed Project and each Action Alternative would include a landscape and mounding buffer along Camino Ricardo to help retain the vegetated appearance of the orchard area from views along the scenic corridor and nearby residences. The landscaped berm would limit the visibility of the proposed housing units along Camino Ricardo (3 units/acre and 12 units/acre) and would effectively retain views of trees and vegetation. Although the landscape berm would help protect views of the site from the west along Camino Ricardo, the proposed landscaped berm would not extend along Moraga Way, a designated scenic corridor.

Development of the Community Center could also result in a significant visual change. Although Alternative Site A would be located near the existing and proposed commercial/retail area, it would be located on currently undeveloped land at the periphery of the developed area, containing trees and vegetation. Alternative Site B would be located across from Moraga Commons within a pocket of land containing and surrounded by large, dense native trees and riparian habitat. Some of these large trees would be removed and the placement of the Community Center structures would result in urbanized development of an area with high natural scenic value. The General Plan Design Guidelines state that mature native tree groupings should be protected (Design Guideline SRC8) and the Scenic Corridor Ordinance limits the removal of specimen trees and tree groves (Municipal Code 8.132.050.11). Both of these sites are located adjacent to Moraga Road, a scenic corridor, and are visible from the Moraga Commons, making changes to the visual character of the two sites significant.

Under all the Alternatives and the Proposed Project, a majority of the existing riparian vegetation along Laguna Creek would be retained and would therefore not result in an adverse impact to this scenic resource. However, General Plan Design Guideline SRC9 seeks to protect drainage patterns, riparian habitat and wildlife by siting development away from area creeks; therefore, adequate setbacks from the creek are required.

The MCSP includes specific Design Guidelines (MCSP Appendix 9.4) to encourage well-designed development that reflects the requirements of the General Plan Design Guidelines and the scenic character of the Town while establishing new and revitalized structures within the MCSP area. These Design Guidelines include strategies for site design, architecture, lighting, signage, walls, fencing, furniture, and landscape within the MCSP residential, community commercial, mixed-use, and office areas.

Although development and revitalization within the MCSP area has the potential to improve scenic character within the Town's scenic corridors, particularly with implementation of the MCSP Design Guidelines that reduce visual impacts of the proposed development, it also has the potential to increase urbanization and eliminate views of the surrounding hillsides, natural landscape and character that contribute to the community's semi-rural appeal.

**Mitigation: 4.E-2a. Develop and Implement Additional MCSP Design Guidelines**

To ensure that the scenic corridors and quality of the area are not adversely affected, the structures and landscaping need to reflect the existing structural and natural character of the adjacent land uses. Additional guidelines need to be developed specifically for areas within 500 feet of the scenic corridors. Careful MCSP design that integrates the Town of Moraga Design Guidelines and Scenic Corridor Ordinance will reduce adverse impacts associated with new development and will help the Town meet goals of visual enhancement. The final MCSP Design Guidelines shall be approved by the Design Review Board prior to adoption and implementation of the Specific Plan.

The MCSP Design Guidelines encourage the use of "semi-rural details" within streetscape and public space design and also require that second stories integrate softened architecture and landscaping to decrease their prominence. The MCSP Design Guidelines also encourage varying setbacks and rooflines to discourage repetitive, unarticulated building forms. To further enhance the MCSP Design Guidelines, the General Plan Guidelines (Municipal Code 8.132.050 – Scenic Corridors), including requirements for structural size, setback, positioning, screening, lighting, and overall architectural compatibility, shall be incorporated into the MCSP Design Guidelines. In addition, these guidelines should require the retention and integration of existing topography, vegetation, and scenic features, thereby deferring the appearance of manmade structures and promoting the importance of these natural features.

The MCSP Design Guidelines include measures requiring structures visible from surrounding areas to have low profiles, and should also include measures regarding contoured grading, dense native landscaping, and blended rooflines to reduce visibility of the structure in favor of the existing natural features. Within the scenic corridors, design should integrate greenbelts between the roadways and developments, with sizing

of these greenbelts both in compliance with the General Plan Design Guidelines and in correlation with proposed structural sizing by use type. In addition, adequate setbacks for residential and commercial/office areas should be established near the riparian corridor to protect habitat and drainage patterns.

#### 4.E-2a. Require Internal View Corridors

To protect scenic corridors and maintain views of surrounding ridgelines, the MCSP should require view corridors through the existing and proposed structures that would retain views of the hills and ridgelines beyond the site. This can be accomplished through the use of setbacks, alleyways, and other open or landscape areas between the structures. At key locations near the intersection of Moraga Road and St. Mary's Road and along Moraga Way, building design, size, and location should be limited to ensure that some ridgeline views are retained and structural spacing should be employed to create viewsheds of scenic vistas within the MCSP area. One-story buildings shall be set back from the two scenic roadways enough to maintain ridgeline views and structural spacing requirements should include at least one minimum 50-foot-wide view corridor between two-story buildings in each block of development to maintain ridgeline visibility. Due to the amount of MCSP land in relation to the volume of structures, there is adequate land available to include these internal view corridors.

#### After

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

The implementation of these measures and the MCSP Design Guidelines will reduce this impact to a less than significant level.

**Impact:** **4.E-3. Will the Project substantially degrade the existing visual quality of the site and its surroundings?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Action Alternative would not result in any change to the existing visual quality of the site or its surroundings. All undeveloped properties would remain in their current state; however developed properties in need of revitalization would not be improved.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

As discussed in Impact 4.E-2 and shown on the viewshed figures, the Proposed Project and Action Alternatives would result in significant changes to the existing rural quality of the orchard areas and would increase the prominence of the urban commercial core. Although revitalization of the existing commercial areas and infill on underutilized parcels with compatible land uses would have the potential to improve the

visual quality of the commercial area, the size and location of some structures may disrupt views of the surrounding hillsides and ridgelines, making the urban core the primary visual feature within some portions of the MCSP area. In addition, the development of the orchard areas for residential and office uses and tree removal for the Community Center may degrade the rural and natural visual quality within the MCSP area. Although the 400-unit and 560-unit Alternatives reduce this degradation through residential clustering, the visual quality immediately adjacent to the roadways would not reflect the existing visual quality of the site, and in some areas would degrade the visual quality afforded by the surrounding hillsides.

Mitigation Measures 4.E-2a and 4.E-2b should be implemented to reduce visual degradation and ensure that new development is designed to reflect the architectural style of the Town and the existing natural features of the site and its surroundings.

**Mitigation:** **4.E-2a. Develop and Implement Additional MCSP Design Guidelines**

**4.E-2b. Require Internal View Corridors**

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and Action Alternatives*

The implementation of these measures and the MCSP Design Guidelines will reduce this impact to a less than significant level.

**Impact:** **4.E-4. Will the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Action Alternative would not result in any change to current lighting or aesthetic character. All existing lighting features would be retained and no new lighting would be installed to affect nighttime views.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Development of the MCSP area with residential, commercial, and retail uses will result in an increase of lighting, affecting views from surrounding parcels and scenic corridors located within the MCSP area, particularly along Moraga Road, Moraga Way, School Street, and Camino Ricardo. While lighting along the “Town Square” and “Main Street” areas would promote Town goals for creating focal points and entranceways, the heavy concentration of lights may also create offsite glare and disturbance, particularly from signage and street lighting. In addition, new structures have the potential to create glare as a result of the construction materials used.

Although a goal of the General Plan and Design Guidelines is to increase the amount of lighting along scenic corridors for aesthetic enhancement,

the overall volume of new lighting generated by the MCSP development and associated signage and street lighting, particularly within the commercial and retail core, may result in a significant increase over existing conditions.

**Mitigation:** **4.E-4. Light and Glare Minimization**

A lighting plan has been developed within the MCSP Design Guidelines. The plan outlines the extent of illumination that would be projected from proposed outdoor lighting and includes a variety of lighting guidelines to increase lighting efficiency while preventing light spillage.

To further minimize light and glare disturbance, the MCSP shall incorporate the following into the Design Guidelines Lighting Plan:

- Utilize lighting that relates to the scale and design of the structure, with intensities just high enough to maintain security.
- Intermix large canopy trees with surface parking areas and lighting to reduce glare.
- Ensure all exterior structural coatings and materials are low reflectance, including roofing materials and commercial coatings.
- Ensure structural façade colors are low reflectance, subtle, neutral or earth tone colors.

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

The integration of these measures and implementation of the MCSP Design Guidelines Lighting Plan will reduce this impact to a less than significant level.

**Impact:** **4.E-5. Will the Project create additional demand for recreation facilities such that new facilities need to be constructed to maintain the existing level of service?**

**Analysis:** *Less than Significant Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative 1 would not result in population growth that would increase the current demand for recreation facilities. Although this alternative would not contribute to the goals of the Moraga Parks and Recreation Master Plan, it would not create additional demand for new facilities.

**Analysis:** *Less than Significant Impact; Proposed Project and Action Alternatives*

The Proposed Project and Action Alternatives would each result in varying increases in Moraga's overall population. It can be expected that the maximum population growth achieved through the Project or

Alternatives would not exceed approximately 1,600 people as discussed in Chapter 4.B (Proposed Project – 1,614 persons, Alternative 2 - 339-unit Alternative – 1,153 persons, Alternative 3 - 400-unit Alternative – 928 persons, and Alternative 4 - 560-unit Alternative – 1,288 persons); equating to a need for approximately five acres of recreation facilities, as shown on Table 4.E-3.

**Table 4.E-3**

Additional Recreation Acreage Demand per Alternative

	Estimated Population Growth	Recreation Demand Calculation	Required Recreation Acreage
Proposed Project	1,614	(1,614/1,000) x 3 acres	4.8 acres
Alternative 1	0	(0/1,000) x 3 acres	0 acres
Alternative 2	1,153	(1,153/1,000) x 3 acres	3.5 acres
Alternative 3	928	(928/1,000) x 3 acres	2.8 acres
Alternative 4	1,288	(1,288/1,000) x 3 acres	3.9 acres

Note: The Town of Moraga General Plan requires 5 acres of recreation land per 1,000 residents. However, this requirement is inconsistent with State law which limits acreage to 3 acres per 1,000 residents. The Moraga Municipal Code outlines park dedication requirements in Section 8.140.080, Standards and formula for dedication of land.

At a minimum, each of the Action Alternatives and Proposed Project results in an approximately 2,000 linear foot (lf) extension of the Lafayette-Moraga Regional Trail along the Laguna Creek corridor. This trail feature would be located within approximately 1 acre of land adjacent to the Creek channel and would not be used for other developed recreational uses. In addition, the Proposed Project and Action Alternatives 3 and 4 would provide additional internal trails and a location for the Community Center and gym on three to four acres of MCSP land, a facility expressly desired by the community during the Recreation Master Plan planning process (Moraga Parks and Recreation Master Plan 2007). The following bullets list the recreational facilities proposed under the Proposed Project and Action Alternatives 3 and 4. Table 4.E-4 provides recreational acreages proposed under each alternative.

**New Recreational Facilities:**

- Moraga-Lafayette Regional Trail (approximately 2,000 lf)
- Internal Bicycle/Pedestrian Trails (approximately 5,000 lf)
- Community Center/Gym (approximately 30,000 sf):
  - Gym – 16,000 sf (with outdoor stage for children’s performances)

- Teen Room – 2,000 sf
- Dance/Fitness Room – 2,500 sf
- Early Childhood Room – 1,500 sf
- Senior Center – 1,500 sf
- Multi-purpose Room – 4,000 sf
- Café – 900 sf
- Storage – 2,000 sf

Table 4.E-4

## Recreation Acreage Provisions per Alternative

	Required Recreation Acres	Proposed Recreation Acres			
		Community Center	Trails	Other Park	Total
Proposed Project	4.8	3-4	1+	0	4-5
Alternative 1	0	0	0	0	0
Alternative 2	3.5	0	1+	2.5+	3.5+
Alternative 3	2.8	3-4	1+	0	4-5
Alternative 4	3.9	3-4	1+	0	4-5

Trail corridor widths could vary as necessary to meet the total recreation needs of each alternative as shown in Table 4.E-4. Therefore, the Proposed Project and each Action Alternative would create adequate new recreation opportunities for the community while meeting recreational facility development requirements and goals of the Moraga Park and Recreation Master Plan to maintain the Town's recreational level of service.

Although Alternative 2 would not result in the development of a community center and gym, it would designate over 2.5 acres of land across from the Moraga Commons area as recreational use.

**Mitigation:** No mitigation is required.

## **4.E-4 CUMULATIVE IMPACTS**

There are several Project impacts identified in the Open Space, Visual Resources, and Recreation section, predominantly significant changes to the visual character of the area.

When combined with other development projects within the Town of Moraga (Palos Colorados, Rancho Laguna, Bollinger Valley developments), the potential to reduce the rural character of the town is cumulatively considerable. The Proposed Project and the Action Alternatives will contribute to the overall urbanization of Moraga, reducing undeveloped in-fill areas and altering the natural aesthetic of these undeveloped parcels. Impacts can be reduced through careful landscaping, setbacks, lighting restrictions, and structural blending; however, the changes associated with the Project and Action Alternatives, in combination with other developments in the Town of Moraga, will be noticeable, particularly from ridgelines and onto hillsides. New urban developments within vegetated areas are in contrast to the semi-rural character of the Town by contributing to general urbanization.

Although new developments in the Town of Moraga increase overall population for the community, the Proposed Project and Action Alternatives would not contribute to a need for additional open space or recreational resources since they would contribute to the overall numbers of these resources and help offset demand in other areas.

## **4.E-5 PREPARERS AND REFERENCES**

### **Preparers**

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### **Reviewers**

Rob Brueck, Hauge Brueck Associates

### **References**

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## **4.F TRANSPORTATION, CIRCULATION, AND PARKING**

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This section addresses the transportation, circulation, and parking constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives.

### **4.F-1 ENVIRONMENTAL SETTING**

#### **Roadway Network**

Regional vehicular access to the Project site is provided by State Route 24, while local access is provided via Moraga Way, Moraga Road/Canyon Road, St. Mary's Road, Camino Ricardo, School Street, and Country Club Drive. These roadways are described below.

State Route 24 (SR 24) is an eight-lane east-west freeway north of the Project site that connects to Interstate 680 (I-680) to the east and State Route 13 (SR 13) to the west. SR 24 has an Annual Average Daily Traffic (AADT) of about 186,000 vehicles (Caltrans, 2006) and four to six lanes in each direction near the Project site.

Moraga Way is generally a two-lane road that extends northwest-southeast between Moraga Road (in the Town of Moraga) and SR 24 in the City of Orinda. Within the Town limits, Moraga Way is a four lane road with left-turn lanes.

Moraga Road/Canyon Road is generally a two-lane north-south road. Moraga Road extends between Moraga Way in the Town of Moraga and Mount Diablo Boulevard in the City of Lafayette. Canyon Road is the extension of Moraga Road south of Moraga Way to Pinehurst Road in Alameda County.

St. Mary's Road is a two-lane north-south road that connects to Moraga Road (south) in the Town of Moraga, and Moraga Road (north) in the City of Lafayette.

Camino Ricardo is a two-lane north-south road that extends along the western frontage of the specific plan area. It intersects Moraga Way at a signalized intersection where it becomes St. Andrew's Drive into the Country Club area.

School Street is a two-lane north-south road that extends from south of the specific plan area near Canyon Road north into site. It currently ends north of Moraga Way.

Country Club Drive is a two- to four-lane east-west road that extends between St. Andrew's Drive and Canyon Road, and continues northeast outside the Project area. It has four lanes between School Street and Canyon Road, and two lanes west of School Street and east of Canyon Road. It has a landscaped median between St. Andrew's Drive and Canyon Road.

## Transit Service

The site is located about 5 miles south of the Lafayette BART station and about 4.5 miles southeast of the Orinda BART station. Central Contra Costa Transit Authority (County Connection) provides bus service in the area.

### ***County Connection***

County Connection currently provides service to the specific plan area via Route 106. In addition, service is provided to St. Mary's College, about one mile northeast of the site, via Route 206. Combined these routes served about 700 daily riders in 2007. Specific route information is provided below.

#### ***Route 106***

Route 106 operates between the Orinda and Lafayette BART stations via Moraga Way, Moraga Road, and St. Mary's Road. The route also serves the St. Mary's College. There are bus stops within the specific plan area along Moraga Way at Moraga Road, School Street, and Camino Ricardo.

Weekday service runs between 6:00 AM and 8:00 PM, with typical headways of 20 minutes during peak periods (6:30-9:30 AM and 4:00 -7:30 PM) and up to an hour in off-peak periods. Saturday service runs between 9:30 AM and 6:00 PM, with 6 buses a day (headways of between 90 and 120 minutes).

The Route 106 is considered a "core route." The 2007 ridership consisted of 36 percent students, 25 percent adults, 6 percent seniors, and 5 percent St. Mary's College students. An additional 20 percent were transfers to BART and 7 percent were transfers to other buses.

#### ***Route 206***

Route 206 operates between St. Mary's College, the Lafayette BART station, and Rossmoor Shopping Center via St. Mary's Road, Mt. Diablo Boulevard, and Olympic Boulevard. Only weekday service is provided, and it is limited, with 3 westbound buses per day and 5 eastbound buses per day. The closest bus stop to the specific plan area is at St. Mary's College. Route 206 is considered a "select services" route, primarily oriented towards school service. Its ridership consists mainly of students.

#### ***Route 250 (Gail Rail Shuttle)***

Route 250 operates between St. Mary's College and the Lafayette BART station via Moraga Road and Rheem Boulevard. Stops are limited to the BART station, St. Mary's College, and the Moraga Road intersection with Rheem Boulevard. Service is limited to Thursday, Friday, Saturday and Sunday.

### **Bay Area Rapid Transit (BART)**

BART provides regional rail service throughout the East Bay and across the Bay to San Francisco and the Peninsula. The closest BART station to the Project site is the Orinda BART station, about 4.5 miles from the specific plan area. The Lafayette BART Station is about 5 miles from the area. The Pittsburg/Bay Point-SFO line provides service at both stations. During the peak hour, 18 trains arrive and depart each station.

Based on BART's most recent Station Profile Survey, most BART riders living in Moraga use the Orinda station. Average ridership originating or ending at the Orinda BART station in March 2008 was about 820 passengers during the morning peak hour (8:00 to 9:00 AM) and 720 passengers during the evening peak hour (5:00 to 6:00 PM). The total daily entries and exits at this station in 2008 were 5,650 passengers. In March 2008 maximum patron queues exiting the Orinda BART station during the PM peak hour were about 4 people with a maximum delay of ten seconds.

### **Bicycle/Pedestrian Network**

Bicycle and pedestrian facilities can be classified into several general types, including:

- Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically 4 to 6 feet wide.
- Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to expect bicyclists.
- Sidewalks – The exclusive realm of pedestrians, sidewalks provide pedestrian access and circulation. Sidewalks can vary in width from 5 to 20 feet; wider sidewalks are typically found in heavily urbanized and downtown areas.

Moraga Way and Moraga Road are designated Class II facilities with striped bicycle lanes, although vehicles often park in the bike lanes on segments of both roads. Rheem Boulevard is a designated Class III bicycle route from Moraga Road to near the Town border. In addition, the Lafayette-Moraga trail, a Class I shared-use path, runs parallel to St. Mary's Road, School Street, and Canyon Road in the study area.

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. There are several signalized intersections in the vicinity of the Project site, including along Moraga Way at Moraga Road, School Street, and Camino Ricardo, and at the St. Mary's

Road/Moraga Road intersection. Each of these signalized intersections has pedestrian facilities; however, not all intersection crossings accommodate pedestrian movements because of conflicting vehicle movements or limited pedestrian facilities.

### Traffic Data Collection

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at 51 study intersections in April 2005, May 2005, September 2006, October 2006, and September 2007 while area schools were in normal session to obtain existing traffic volumes. The intersection study locations are identified on Figure 4.F-1. The data count sheets for each intersection are provided in a separate document *Transportation Circulation and Parking Technical Worksheets for Moraga Center Specific Plan* available at the Town of Moraga offices.

The overall hour with the highest traffic volumes for all the intersections combined was identified as 7:45-8:45 AM and 5:00-6:00 PM. The AM and PM peak hour data used as the basis for the intersection operational analysis is provided in Appendix D. Traffic signal timing data was also collected for the signalized study intersections.

### Existing Intersection Operations

The AM and PM peak hour existing traffic volumes were used with the existing lane configurations and signal parameters to calculate existing intersection operations and Level of Service (LOS). Methodologies in the *Highway Capacity Manual* (HCM) were used to quantify intersection operations at both signalized and unsignalized intersections. Refer to Appendix D for a description of the different level of service grades.

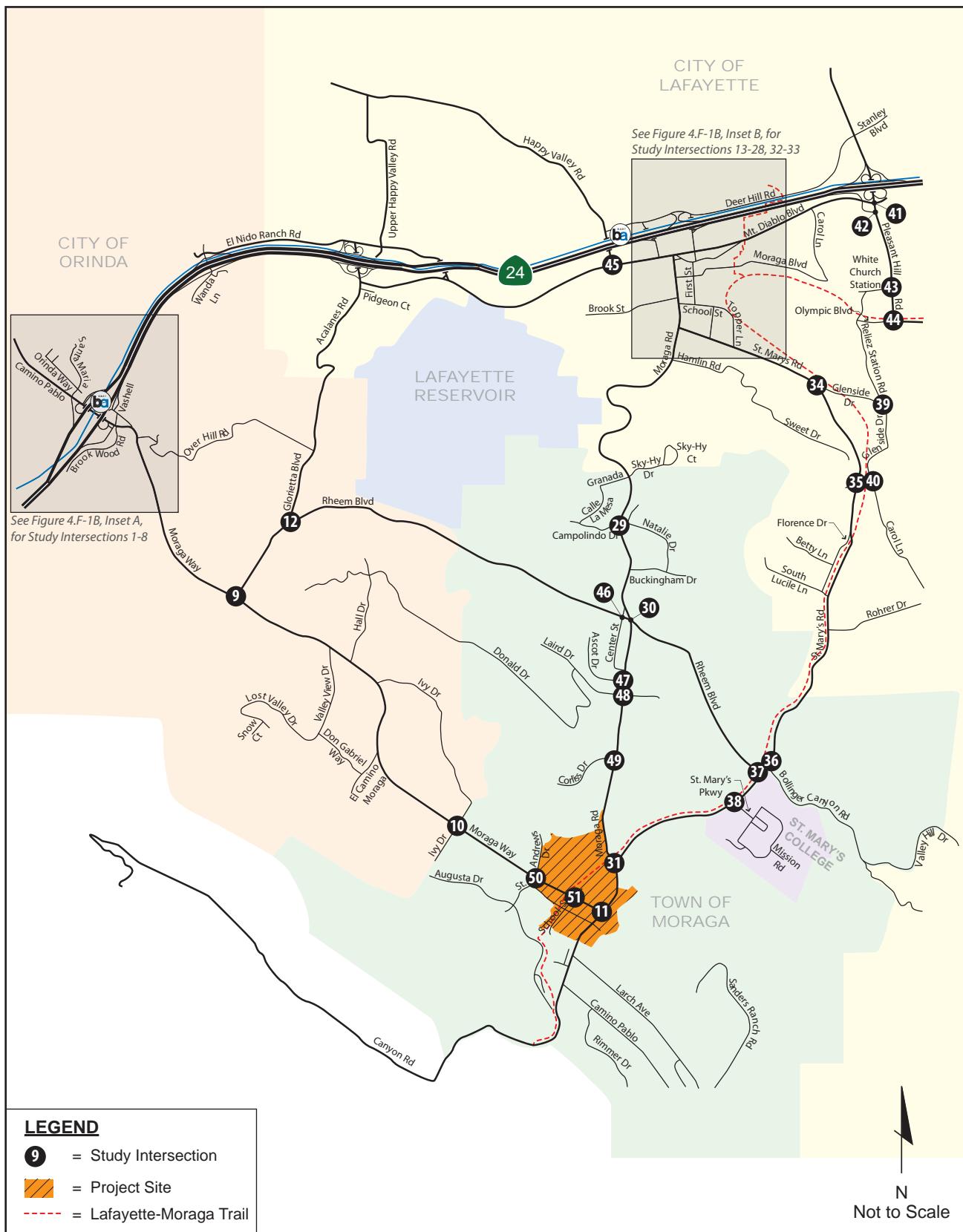
A traffic signal was assumed at the Ascot Drive/Moraga Road intersection in Moraga, which is currently unsignalized, because the Town has funding for signalization and is currently designing the signal. The HCM-based intersection analysis results (obtained from SYNCHRO software) indicate that 7 study intersections currently operate below established local standards. The complete list of study intersections and the resulting intersection LOS is shown in Table 4.F-1.

This analysis also examines the general correlation between peak hour traffic demand and the need to install a traffic signal. Table 4.F-2 identifies those unsignalized intersections that meet the peak hour traffic signal warrant. Seven study intersections meet the peak hour traffic signal warrant. The evaluation is a sub-set of the traffic signal warrants recommended in the Federal Highway Administration's *Manual on Uniform Traffic Control Devices* (as amended for use in California). This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated. The decision to install a signal should not be based solely upon the warrants, but should also take into account field conditions such as delay, congestion, approach conditions, driver confusion, future land use, or other evidence of the need for right-of-way assignment beyond that which could be provided by stop signs.

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

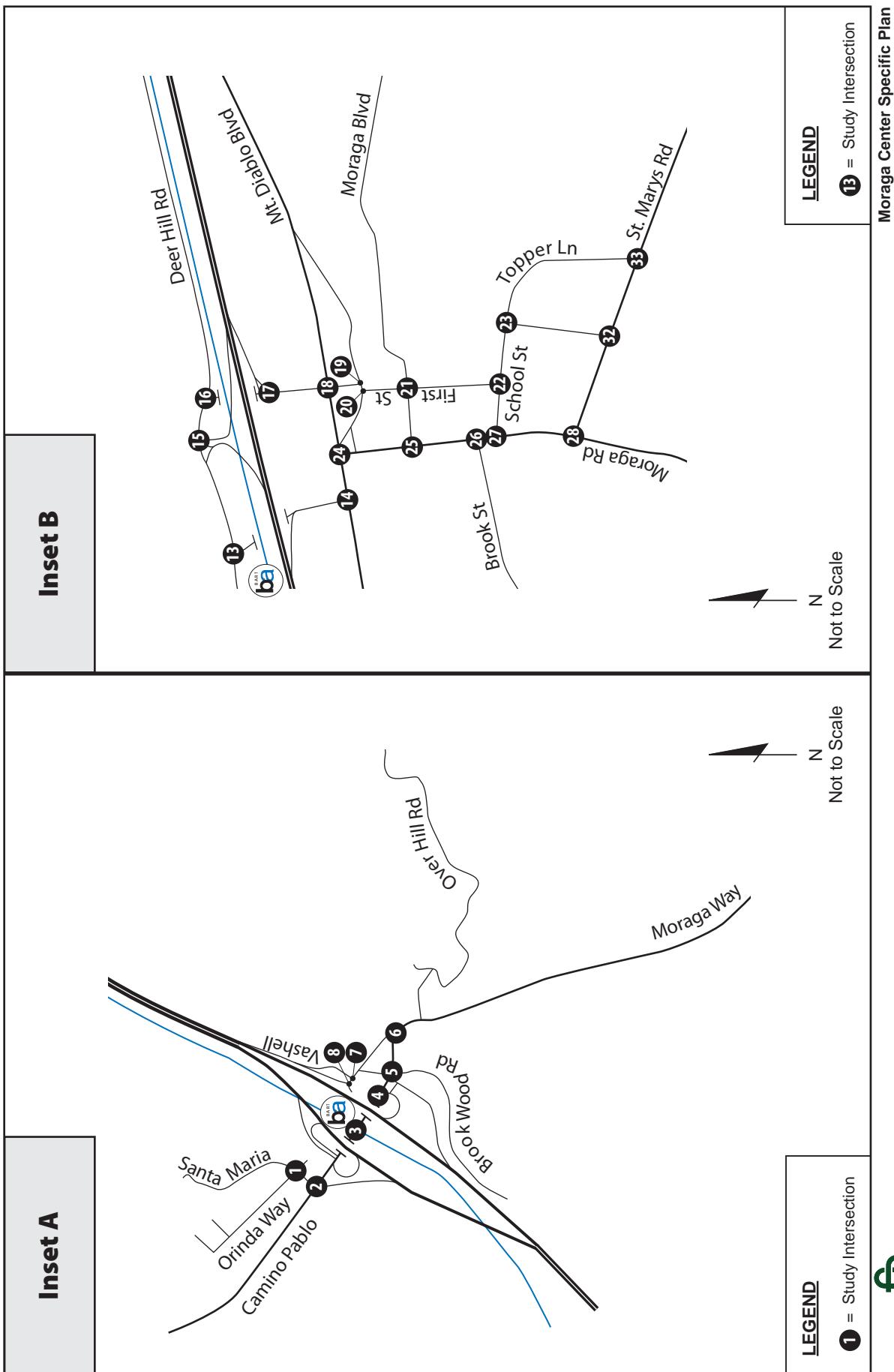
**Figure 4.F-1a Study Area and Study Intersection Locations (Black and White)**



**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 4.F-1b Study Area and Study Intersection Locations (Black and White)**



**Table 4.F-1**

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
<b>Orinda Intersections</b>								
1. Orinda Way at Santa Maria Way	Signal	AM	12	B	12	B	12	B
	CBD	PM	15	B	15	B	16	B
2. Camino Pablo at Santa Maria Way	Signal	AM	7	A	7	A	8	A
	CBD	PM	19	B	22	C	51	D
3. Camino Pablo at BART Driveways	SSS	AM	1 (16)	A (C)	1 (16)	A (C)	1 (24)	A (C)
	CBD	PM	2 (27)	A (D)	3 (28)	A (D)	22 (171)	C (F)
4. Camino Pablo at SR 24 EB Ramps	No Control	AM	n/a	n/a	n/a	n/a	n/a	n/a
	CBD	PM						
5. Camino Pablo at Brookwood Road	Signal	AM	58	E	64	E	<b>92</b>	<b>F</b>
	CBD	PM	<b>98</b>	<b>F</b>	<b>115</b>	<b>F</b>	<b>163</b>	<b>F</b>
6. Camino Pablo at Moraga Way	Signal	AM	13	B	13	B	15	B
	CBD	PM	17	B	18	B	21	C
7. Brookwood Road at Moraga Way	AWS	AM	18	C	18	C	23	C
	CBD	PM	15	C	15	C	24	C
8. Bryant Way at Moraga Way	SSS	AM	5 (17)	A (C)	5 (17)	A (C)	6 (20)	A (C)
	CBD	PM	6 (17)	A (C)	6 (17)	A (C)	6 (21)	A (C)
9. Glorietta Boulevard at Moraga Way	Signal	AM	<b>80</b>	<b>F</b>	<b>88</b>	<b>F</b>	<b>123</b>	<b>F</b>
	Suburban	PM	25	C	27	C	39	D
10. Ivy Drive at Moraga Way	Signal	AM	43	D	44	D	<b>61</b>	<b>E</b>
	Suburban	PM	24	C	24	C	30	C
12. Glorietta Boulevard at Rheem Boulevard	SSS	AM	11 (20)	B (C)	12 (22)	B (C)	17 (33)	C (D)
	Suburban	PM	5 (14)	A (B)	5 (16)	A (B)	7 (21)	A (C)

**Table 4.F-1**

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
<b>Lafayette Intersections</b>								
13. Deer Hill Drive at Oak Hill Road	AWS	AM	38	E	39	E	39	E
	Downtown	PM	41	E	47	E	60	F
14. Mt. Diablo Boulevard at Oak Hill Road	Signal	AM	27	C	28	C	31	C
	Downtown	PM	31	C	33	C	42	D
15. Deer Hill Drive at SR 24 Westbound Ramps	Signal	AM	32	C	33	C	44	D
	Downtown	PM	30	C	32	C	49	D
16. Deer Hill Drive at 1st Street	Signal	AM	12	B	12	B	14	B
	Downtown	PM	15	B	17	B	21	C
17. SR 24 Eastbound On-Ramp at 1st Street	No Control	AM	n/a	n/a	n/a	n/a	n/a	n/a
	Downtown	PM						
18. Mt. Diablo Boulevard at 1st Street	Signal	AM	30	C	31	C	33	C
	Downtown	PM	28	C	29	C	32	C
19. First Street at Golden Gate Way (East)	SSS	AM	6 (12)	A (B)	6 (12)	A (B)	6 (13)	A (B)
	Outside Downtown	PM	5 (10)	A (A)	5 (10)	A (A)	6 (11)	A (B)
20. First Street at Golden Gate Way (West)	SSS	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	Outside Downtown	PM	4 (6)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street at Moraga Boulevard	AWS	AM	9	A	9	A	10	A
	Outside Downtown	PM	9	A	9	A	9	A
22. First Street at School Street	SSS	AM	6 (13)	A (B)	6 (13)	A (B)	6 (14)	A (B)
	Outside Downtown	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (A)
23. Avalon Avenue at School Street	SSS	AM	2 (13)	A (B)	2 (13)	A (B)	2 (14)	A (B)
	Outside Downtown	PM	1 (10)	A (A)	1 (10)	A (A)	1 (11)	A (B)
24. Mt. Diablo Boulevard at Moraga Road /3/	Signal	AM	51	D	--	F	--	F
	Downtown	PM	53	D	--	F	--	F

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
25. Moraga Road at Moraga Boulevard /3/	Signal	AM	--	E	--	F	--	F
	Downtown	PM	20	B	--	F	--	F
26. Moraga Road at Brook Street /3/	Signal	AM	--	E	--	F	--	F
	Downtown	PM	21	C	--	F	--	F
27. Moraga Road at School Street /3/	Signal	AM	42	D	--	F	--	F
	Downtown	PM	17	B	--	F	--	F
28. Moraga Road at St. Mary's Road (North) /3/	Signal	AM	34	C	--	F	--	F
	Downtown	PM	31	C	--	F	--	F
32. St. Mary's Road at Avalon Avenue	SSS	AM	2 (18)	A (C)	2 (19)	A (C)	2 (21)	A (C)
	Outside Downtown	PM	2 (19)	A (C)	2 (19)	A (C)	3 (24)	A (C)
33. St. Mary's Road at Topper Lane	SSS	AM	3 (25)	A (D)	3 (25)	A (D)	4 (32)	A (D)
	Outside Downtown	PM	2 (19)	A (C)	2 (19)	A (C)	2 (23)	A (C)
34. Glenside Drive at St. Mary's Road (North)	AWS	AM	12	B	12	B	13	B
	Outside Downtown	PM	10	A	10	A	11	B
35. Glenside Drive at St. Mary's Road (South)	AWS	AM	21	C	22	C	40	E
	Outside Downtown	PM	21	C	22	C	44	E
39. Glenside Drive at Reliez Station Road	AWS	AM	91	F	98	F	146	F
	Outside Downtown	PM	49	E	56	F	102	F
40. Glenside Drive at Burton Drive	AWS	AM	34	D	38	E	44	E
	Outside Downtown	PM	25	D	28	D	57	F
41. Pleasant Hill Rd at Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	Signal	AM	14	B	14	B	18	B
	Outside Downtown	PM	18	B	18	B	26	C
42. Pleasant Hill Rd at Old Tunnel Rd- SR 24 Eastbound Off-Ramp	Signal	AM	10	A	10	A	10	A
	Outside Downtown	PM	11	B	11	B	13	B

**Table 4.F-1**

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
43. Pleasant Hill Road at Condit Drive	Signal	AM	9	A	9	A	10	A
	Outside Downtown	PM	7	A	7	A	8	A
44. Pleasant Hill Road at Olympic Boulevard	AWS	AM	55	F	59	F	92	F
	Outside Downtown	PM	48	E	52	F	73	F
45. Happy Valley Road at Mt. Diablo Boulevard	Signal	AM	25	C	25	C	30	C
	Downtown	PM	35	C	35	C	39	D
<b>Moraga Intersections</b>								
11. Moraga Way at Moraga Road	Signal	AM	25	C	26	C	33	C
	Suburban	PM	28	C	30	C	38	D
29. Campolindo Drive at Moraga Road	Signal	AM	18	B	22	C	24	C
	Suburban	PM	14	B	17	B	20	B
30. Rheem Boulevard at Moraga Road	Signal	AM	21	C	21	C	23	C
	Suburban	PM	20	C	21	C	23	C
31. Moraga Road at St. Mary's Road (South)	Signal	AM	12	B	13	B	14	B
	Suburban	PM	12	B	12	B	14	B
36. Bollinger Canyon Road at St. Mary's Road	SSS	AM	1 (20)	A (C)	1 (21)	A (C)	5 (32)	A (D)
	Suburban	PM	1 (16)	A (C)	1 (17)	A (C)	3 (22)	A (C)
37. Rheem Boulevard at St. Mary's Road	SSS	AM	5 (25)	A (C)	6 (26)	A (D)	12 (59)	B (F)
	Suburban	PM	5 (26)	A (D)	5 (27)	A (D)	14 (79)	B (F)
38. St. Mary's Parkway at St. Mary's Road	SSS	AM	4 (15)	A (C)	4 (16)	A (C)	4 (18)	A (C)
	Suburban	PM	6 (15)	A (C)	6 (15)	A (C)	6 (18)	A (C)
46. Center Street at Rheem Boulevard	Signal	AM	8	A	9	A	9	A
	Suburban	PM	10	B	10	B	10	B
47. Moraga Road at Ascot Drive	Signal	AM	10	A	10	A	11	B
	Suburban	PM	8	A	8	A	9	A

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
48. Moraga Road at Donald Drive	Signal	AM	11	B	12	B	13	B
	Suburban	PM	7	A	7	A	7	A
49. Moraga Road at Corliss Drive	SSS	AM	23 (200)	C (F)	<b>28 (247)</b>	<b>D (F)</b>	<b>50 (444)</b>	<b>E (F)</b>
	Suburban	PM	6 (59)	A (F)	7 (73)	A (F)	15 (162)	B (F)
50. Moraga Way at St. Andrews Drive	Signal	AM	11	B	11	B	13	B
	Suburban	PM	12	B	12	B	13	B
51. Moraga Way at School Street	Signal	AM	10	A	10	A	10	A
	Suburban	PM	11	B	11	B	12	B

**Bold** font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

/3/ These intersections were evaluated using the SimTraffic component of the SYNCHRO software to account for the field observed vehicle queue length fluctuations, school children crossings, left-turn conflicts, and unique signal timing parameters. Delay for LOS D or better based on the average of 5 random runs. Delay for LOS E or F is not reported because of variability between runs.

Source: Fehr & Peers, 2008

**Table 4.F-2**

Baseline Intersection Peak Hour Traffic Signal Warrants (AM and PM Peak Hours)

Does the unsignalized intersection meet the peak hour traffic signal warrant criteria (Yes or No)?					
	Control /1/	Peak Hour	Existing Baseline	Approved Baseline	Cumulative Baseline
<b>Orinda Intersections</b>					
7. Brookwood Road at Moraga Way	AWS	AM	No	No	No
		PM	No	No	<b>Yes</b>
8. Bryant Way at Moraga Way	SSS	AM	No	No	No
		PM	No	No	No
12. Glorietta Boulevard at Rheem Boulevard	SSS	AM	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
		PM	No	No	No
<b>Lafayette Intersections</b>					
13. Deer Hill Drive at Oak Hill Road	AWS	AM	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
		PM	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
19. First Street at Golden Gate Way (East)	SSS	AM	No	No	No
		PM	No	No	No
20. First Street at Golden Gate Way (West)	SSS	AM	No	No	No
		PM	No	No	No
21. First Street at Moraga Boulevard	AWS	AM	No	No	No
		PM	No	No	No
22. First Street at School Street	SSS	AM	No	No	No
		PM	No	No	No
23. Avalon Avenue at School Street	SSS	AM	No	No	No
		PM	No	No	No
32. St. Mary's Road at Avalon Avenue	SSS	AM	No	No	No
		PM	No	No	No
33. St. Mary's Road at Topper Lane	SSS	AM	No	No	No
		PM	No	No	No

**Table 4.F-2**

Baseline Intersection Peak Hour Traffic Signal Warrants (AM and PM Peak Hours)

Does the unsignalized intersection meet the peak hour traffic signal warrant criteria (Yes or No)?					
	Control /1/	Peak Hour	Existing Baseline	Approved Baseline	Cumulative Baseline
34. Glenside Drive at St. Mary's Road (North)	AWS	AM	No	No	No
		PM	No	No	No
35. Glenside Drive at St. Mary's Road (South)	AWS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes
39. Glenside Drive at Reliez Station Road	AWS	AM	Yes	Yes	Yes
		PM	No	No	No
40. Glenside Drive at Burton Drive	AWS	AM	Yes	Yes	Yes
		PM	No	No	Yes
44. Pleasant Hill Road at Olympic Boulevard	AWS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes
<b>Moraga Intersections</b>					
36. Bollinger Canyon Road at St. Mary's Road	SSS	AM	No	No	No
		PM	No	No	No
37. Rheem Boulevard at St. Mary's Road	SSS	AM	No	No	Yes
		PM	No	No	No
38. St. Mary's Parkway at St. Mary's Road	SSS	AM	No	No	No
		PM	No	No	Yes
49. Moraga Road at Corliss Drive	SSS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes

/1/ SSS = side-street stop, AWS = all-way stop

Source: Fehr &amp; Peers, 2008

***Orinda***

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the PM peak hour

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

***Lafayette***

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM and PM peak hour and the intersection meets the peak hour traffic signal warrant during both peak hours

Moraga Boulevard/Moraga Road (intersection #25) operates at an unacceptable LOS E in the AM peak hour

Brook Street/Moraga Road (intersection #26) operates at an unacceptable LOS E in the AM peak hour

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an acceptable LOS but the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and LOS E in the PM peak hour, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) meets the peak hour signal warrant during the AM peak hour; however, the intersection LOS is acceptable

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM peak hour and LOS E in the PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

***Moraga***

Moraga Road/Corliss Drive (intersection #49) operates at an acceptable LOS C overall but an unacceptable LOS F on the side street in the AM and PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

**Existing Routes of Regional Significance Operations**

Traffic operations along routes of regional significance were evaluated using the Contra Costa Transportation Authority (CCTA) traffic model. Three corridors were evaluated

including SR 24 between I-680 and the Caldecott Tunnel, Camino Pablo between SR 24 and Bear Creek Road, and Pleasant Hill Road between SR 24 and Tayler Boulevard. Table 4.F-3 summarizes the AM and PM peak hour traffic volume characteristics along the three study corridors. The table also notes the calculated Delay Index for each study corridor. For this study, an acceptable Delay Index is considered to be 2.0, averaged over each study corridor. As noted in the table, all study corridors currently operate at acceptable Delay Indices except for westbound SR 24 in the AM peak hour.

### Baseline Land Use Scenarios

The Project is evaluated against the existing environment and two potential future land use scenarios. The first represents a baseline condition after completion and occupancy of all approved projects in the Lamorinda area. The second represents a potential baseline condition in Year 2030 based on growth consistent with general plan development in Lafayette, Moraga, and Orinda. Table 4.F-4 provides a list of approved developments and Table 4.F-5 provides a list of cumulative development assumptions used in the transportation analysis.

Growth under the Approved and Cumulative scenarios was based on data provided by Planning Department staff at the Cities of Lafayette and Orinda and the Town of Moraga. The growth provided by Staff was checked for reasonableness against growth assumptions in *Projections 2007* published by the Association of Bay Area Government (ABAG). The overall growth for Lamorinda, as provided by local staff, represents about 90 percent of the household growth Projected by ABAG through 2030, and about 135 percent of the employment growth.

Overall, development already approved in Lafayette but not yet occupied includes about 20 residential units, and 95,000 square feet of commercial/civic uses. An additional 820 residential units, and 380,000 square feet of commercial use was assumed by Year 2030.

Overall, development already approved in Moraga but not yet occupied includes about 210 residential units. For Year 2030, an additional 590 residential units and 10,000 square feet of commercial uses were assumed.

Overall, development already approved in Orinda but not yet occupied includes about 270 residential units, and miscellaneous recreational uses. An additional 330 residential units and 420,000 square feet of commercial uses were assumed by Year 2030.

**Table 4.F-3**

## Volumes and Delay Indices – Routes of Regional Significance

Peak Hour	Volumes								Delay Indices				
	SR 24 Between I-680 and the Caldecott Tunnel												
	2005				2030				2005		2030		
Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	High	Low	High	Low	Eastbound	Westbound	Eastbound	Westbound
AM	6,200	4,800	9,500	7,700	8,800	7,600	12,500	9,400	1.09	<b>2.01</b>	1.65	<b>3.97</b>	
PM	8,500	7,700	7,900	6,800	11,800	9,900	9,800	8,700	1.85	1.36	<b>4.50</b>	<b>2.20</b>	
Camino Pablo Between Bear Creek Road and SR 24													
Peak Hour	2005				2030				2005		2030		
	Northbound		Southbound		Northbound		Southbound		Northbound	Southbound	Northbound	Southbound	
	High	Low	High	Low	High	Low	High	Low	Northbound	Southbound	Northbound	Southbound	
AM	750	650	1,050	750	950	900	1,400	950	1.03	1.10	1.26	1.70	
PM	1,150	850	800	650	1,400	950	1,000	950	1.44	1.03	1.81	1.55	
Pleasant Hill Road Between Taylor Boulevard and SR 24													
Peak Hour	2005				2030				2005		2030		
	Northbound		Southbound		Northbound		Southbound		Northbound	Southbound	Northbound	Southbound	
	High	Low	High	Low	High	Low	High	Low	Northbound	Southbound	Northbound	Southbound	
AM	1,200	950	1,900	1,350	1,950	1,200	2,800	2,050	1.01	1.22	1.08	<b>3.52</b>	
PM	2,050	1,300	2,050	1,450	2,800	2,050	2,350	1,600	1.38	1.40	<b>3.41</b>	<b>2.29</b>	

Source: Fehr &amp; Peers, 2008. calculated from the Contra Costa Transportation Authority Traffic Model

**Table 4.F-4**

## Development Projects under the approved baseline Condition

<b>Location</b>	<b>Project</b>	<b>Use</b>	<b>Size /1/</b>
Lafayette	Hidden Oaks	Single-Family	21 DU
Lafayette	Lafayette Mercantile	Office	33 ksf
		Retail	22 ksf
Lafayette	Lafayette Library & Learning Center	Library	30.3 ksf
Lafayette	Veteran's Building	Civic Building	10.5 ksf
Moraga	Kimberly	Single-Family	2 DU
Moraga	Crossbrook	Single-Family	3 DU
Moraga	Corliss & Moraga Rd	Single-Family	1 DU
Moraga	500 Rheem Blvd	Single-Family	1 DU
Moraga	229 Rheem Blvd	Single-Family	1 DU
Moraga	Country Club	Single-Family	68 DU
Moraga	Los Encinos	Single-Family	10 DU
Moraga	Palos Colorados	Single-Family	123 DU
Orinda	Sandy Lane Subdivision	Single-Family	3 DU
Orinda	Gateway Valley	Single-Family	245 DU
		Softball Fields	5 fields
		Garden Center	4.5 acres
		Swim Club	6 acres
Orinda	Soule Road Subdivision	Single-Family	3 DU
Orinda	Lloyd Lane Subdivision	Single-Family	2 DU
Orinda	Park Way Subdivision	Single-Family	3 DU
Orinda	Orinda Oaks/Castlegate	Single-Family	12 DU

Notes:

/1/ DU = dwelling unit, ksf = thousand square feet

Source: Fehr &amp; Peers, 2008

**Table 4.F-5**

## Development Projects under the cumulative baseline Condition

Location	Project	Use	Size /1/
Lafayette	Town Center Phase II	Office	26 ksf
Lafayette	Lafayette Park Terrace	Condo	32 DU
Lafayette	Soldier Field Subdivision	Single-Family	8 DU
Lafayette	In-fill housing	Single-Family	250 DU
Lafayette	In-fill retail	Commercial	380 ksf
Lafayette	Downtown In-fill housing	Multi-Family	500 DU
Moraga	Bollinger Valley	Single-Family	126 DU (20% with 2 <sup>nd</sup> Units)
Moraga	Indian Valley	Single-Family	150 DU
Moraga	Rheem Park	Commercial Senior Housing	10 ksf 64 DU
Moraga	Northwest Moraga	Single-Family	19 DU
Moraga	Northeast Moraga	Single-Family	65 DU
Moraga	Central Moraga	Single-Family	1 DU
Moraga	Southeast Moraga	Single-Family	35 DU
Moraga	In-fill Housing	Single-Family	100 DU
Orinda	Pine Grove	Single-Family and Condo	65 SF DU; 8 condos
Orinda	Former Library Site	Senior Housing	44 DU
Orinda	Southwood Valley	Single-Family	17 DU
Orinda	Moraga Adobe Subdivision	Single-Family	15 DU
Orinda	BART Office Complex	Office	300 ksf
Orinda	Phair Building	Commercial Condo	20 ksf 20 DU
Orinda	North Orinda Residential	Commercial Condo	50 ksf 60 DU
Orinda	Crossroad Orinda Residential	Commercial Condo	50 ksf 30 DU
Orinda	In-fill Housing	Single-Family	70 DU

Notes:

/1/ DU = dwelling unit, ksf = thousand square feet

Source: Fehr &amp; Peers, 2008

## Existing plus Approved Intersection Operations

The HCM-based intersection analysis results for the AM and PM peak hours (obtained from SYNCHRO software) indicate that 12 study intersections will operate below the established local standards, and 7 unsignalized intersections will meet the peak hour traffic signal warrant. Refer to Table 4.F-1 for the LOS results at each study intersection and table 4.F-2 provides the peak hour signal warrant results. The Approved Baseline intersection traffic volumes are provided in Appendix D.

### ***Orinda***

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the PM peak hour

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

### ***Lafayette***

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM and PM peak hour and the intersection meets the peak hour traffic signal warrant during both peak hours

Mt. Diablo Boulevard/Moraga Road (intersection #24), Moraga Boulevard/Moraga Road (intersection #25), Brook Street/Moraga Road (intersection #26), School Street/Moraga Road (intersection #27), and St. Mary's Road North/Moraga Road (intersection #28) will operate at an unacceptable LOS F in the AM and PM peak hours. Peak hour traffic demand through these intersections will exceed the system's available capacity which will alter driver behavior. For example, drivers may shift their trip making through the area to times outside the peak hours.

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an acceptable LOS but the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and PM peak hours, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) operates at an unacceptable LOS E in the AM peak hour, and the intersection meets the peak hour signal warrant during the AM peak hour

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

***Moraga***

Moraga Road/Corliss Drive (intersection #49) operates at an unacceptable LOS D in the AM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

**Cumulative 2030 Traffic Operations**

The HCM-based intersection analysis results for the AM and PM peak hours (obtained from SYNCHRO software) indicate that 15 study intersections will operate below the established local standards, and 10 unsignalized intersections will meet the peak hour traffic signal warrant. Refer to Table 4.F-1 for the LOS results at each study intersection, and Table 4.F-2 for locations meeting the peak hour signal warrant. The Cumulative Baseline intersection traffic volumes are provided in Appendix D.

***Orinda***

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the AM and PM peak hours

Brookwood Road/Moraga Way (intersection #7) meets the peak hour signal warrant during the PM peak hour; however, intersection LOS is acceptable

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Ivy Drive (south)/Moraga Way (intersection #10) operates at an unacceptable LOS E in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

***Lafayette***

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

Mt. Diablo Boulevard/Moraga Road (intersection #24), Moraga Boulevard/Moraga Road (intersection #25), Brook Street/Moraga Road (intersection #26), School Street/Moraga Road (intersection #27), and St. Mary's Road North/Moraga Road (intersection #28) will operate at an unacceptable LOS F in the AM and PM peak hours. Peak hour traffic demand through these intersections will exceed the system's available capacity which will alter driver

behavior. For example, drivers may shift their trip making through the area to times outside the peak hours.

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an unacceptable LOS E in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and PM peak hours, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour, and the intersection meets the peak hour signal warrant during both peak hours

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

### ***Moraga***

Moraga Way/Moraga Road (intersection #11) operates at an unacceptable LOS D in the PM peak hour

Rheem Boulevard / St. Mary's Road (intersection #37) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

St. Mary's Parkway / St. Mary's Road (intersection #38) meets the peak hour signal warrant during the PM peak hour; however, intersection LOS is acceptable

Moraga Road/Corliss Drive (intersection #49) operates at an unacceptable LOS E in the AM peak hour for the overall intersection, and the intersection meets the peak hour traffic signal warrant during both peak hours

### ***Routes of Regional Significance Operations***

Refer to Table 4.F-3 for volume forecasts and calculated Delay Indexes obtained from the CCTA traffic model. As indicated, the Delay Index for the SR 24 corridor is expected to exceed the 2.0 threshold in the westbound direction during the AM peak hour and in both the east and west directions during the PM peak hour. The Pleasant Hill Road corridor Delay Indices are expected to exceed the 2.0 threshold for the southbound direction in the AM peak hour and in both the north and south directions during the PM peak hour. Delay Indices for the Camino Pablo corridor are expected to be less than the 2.0 threshold.

## Project Site Characteristics

The Proposed Project and the Action Alternatives would add additional development to the specific plan area. Streets within and leading to the largest undeveloped portions of the site would be built to Town of Moraga and Fire District standards. The Project would also extend School Street and integrate the Lafayette-Moraga Regional Trail with the extension. The various alternatives studied in the transportation analysis include:

The Proposed Project as analyzed in this study consists of a mix of uses, including 720 residential units (20 single-family dwelling units, 400 compact or attached housing units, and 300 senior housing units), 150 assisted living and congregate care units, 85 hotel/bed and breakfast rooms, 90,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

The Alternative 1 refers to the no build or “No Action” Alternative. This condition presumes that the specific plan area would remain as it is today with no changes to the transportation infrastructure and no changes to the land use designations; it also assumes that no new structures would be built anywhere within the planning area, and that no existing uses would be replaced with land uses having higher trip generation rates.

Alternative 2 represents the current land development scenario evaluated in the environmental document prepared for the Town’s 2002 General Plan. For this transportation analysis the assumed land uses included 339 single-family dwelling units, 16,000 square feet of retail, and 38,000 square feet of office space.

Alternative 3 as analyzed in this study includes 400 residential units (50 single-family dwelling units, 250 compact or attached housing units, and 100 senior housing units), 60 assisted living and congregate care units, 50 hotel/bed and breakfast rooms, 50,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

Alternative 4 as analyzed in this study includes 560 residential units (65 single-family dwelling units, 265 compact or attached housing units, and 230 senior housing units), 90 assisted living and congregate care units, 50 hotel/bed and breakfast rooms, 90,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

## **Vehicle Trip Generation Estimation**

The number of vehicle trips added to the surrounding roadway system was estimated through a modeling process that incorporates trip generation rates from *Trip Generation* published by the Institute of Transportation Engineers and the CCTA model as well as data from the US Census, the Bay Area Travel Survey (for the Lamorinda area), local traffic counts, data collected at St. Mary’s College and Miramonte High School, and a market assessment for the Moraga Center Specific Plan. The model estimates the number of trips that remain internal to Moraga as well as the number of trips that leave Moraga.

Table 4.F-6 summarizes the daily vehicle trip generation inputs to the vehicle trip generation modeling process. Table 4.F-7 summarizes the trip generation model output for the AM and PM peak hours as well as the daily traffic. A complete description of the modeling process is described in the *Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns* (Fehr & Peers, 2007) and its supporting technical appendix. The Community Center vehicle trip generation process was described in a technical memorandum *Trip Estimates and Parking Estimates – Community Center Moraga California* (Fehr & Peers, 2008). These documents are provided in Appendix D. Table 4.F-7 reflects the number of trips, without consideration of trip length or trip origination/destination. Therefore, an increase in the number of trips does not necessarily mean an increase in total vehicle miles driven.

**Table 4.F-6**

Moraga Center Daily Vehicle Trip Generation Rates

Land Type	Daily Vehicle Trip Rate
Single Family Residences (Trips per d.u.)	10.58
Multi-Family Residences (Trips per d.u.)	6.38
Workforce Housing (Trips per d.u.)	6.38
Student and/or Faculty Housing (Trips per d.u.)	5.96
Active Senior Residences (Trips per d.u.)	3.71
Retail (Trips per 1000 sq. ft.)	29.73
Office (Trips per 1000 sq. ft.)	16.03
Hotel / B&B Rooms (Trips per room)	8.17
Assisted Living (Trips per Unit)	2.74
Congregate Care (Trips Per Unit)	2.02

Source: Table 10, *Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns*, June 2007, Fehr & Peers

**Table 4.F-7**

## Moraga Center Specific Plan Vehicle Trip Generation

Trip Type	AM Peak Hour			PM Peak Hour			Daily		
	Total	In	Out	Total	In	Out	Total	In	Out
<b>Proposed Project (720 Units)</b>									
<i>Net New Project Trips</i>	323	130	193	423	221	202	5,060	2,520	2,540
Trips External to Moraga	148	58	90	162	86	76	1,834	910	924
Internal Town Center Trips	32	16	16	60	30	30	744	372	372
BART Trips	3	1	2	2	1	1	23	11	12
<b>Alternative 1 (No Action)</b>									
<i>Net New Project Trips</i>	0	0	0	0	0	0	0	0	0
<b>Alternative 2 (339 Units)</b>									
<i>Net New Project Trips</i>	222	36	186	258	169	89	3,100	1,568	1,532
Trips External to Moraga	129	11	118	120	90	30	1,389	696	693
Internal Town Center Trips	16	8	8	32	16	16	394	197	197
BART Trips	2	0	2	1	1	0	20	9	11
<b>Alternative 3 (400 Units)</b>									
<i>Net New Project Trips</i>	196	78	118	256	132	124	3,080	1,531	1,549
Trips External to Moraga	82	34	48	95	48	47	1,063	527	536
Internal Town Center Trips	18	9	9	32	16	16	408	204	204
BART Trips	2	1	1	2	1	1	14	7	7
<b>Alternative 4 (560 Units)</b>									
<i>Net New Project Trips</i>	276	121	155	365	183	182	4,371	2,148	2,223
Trips External to Moraga	122	55	67	136	67	69	1,541	747	794
Internal Town Center Trips	26	13	13	48	24	24	608	304	304
BART Trips	2	1	1	2	1	1	20	10	10
<b>Community Center /1/</b>									
<i>Net New Project Trips</i>	47	26	21	180	90	90	--	--	--
Trips External to Moraga	17	10	7	67	34	33	--	--	--

/1/ The Community Center vehicle trips are a component to the Proposed Project, Alternative 3, and Alternative 4. The daily traffic generation was not calculated for the community center.

Fehr & Peers 2008

### ***Transit Trip Generation Estimation***

Due to the mixed-use character of the Project, the proximity of local bus stops, and the existing bus service between the site and key destinations, the Project is likely to increase the number of trips by bus to and from the site. According to 2000 Census data, one percent of Moraga residents commute to work via bus. Bus trips to school, shopping, and other destinations are not reported in the Census. The current system, however, is designed to primarily serve commuters and students, and so transit ridership from the Project is expected to be similarly focused. As a result, peak hour bus ridership from the project is estimated to be less than 10 people.

### ***Project Trip Distribution and Assignment***

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. The trip distribution for the Project is based on select zone analyses using the CCTA model. This analysis determines current travel patterns from the area around the Project site, and takes into consideration the specific land uses included in the project. Based on the distribution patterns, project trips were assigned to the roadway network and study intersections via the most direct route.

#### *For commercial uses*

Of the AM and PM peak hour commercial traffic generated by the specific plan area, about 57% is expected to leave the Lamorinda area, while 9% is expected to have an origin or destination in Orinda and 5% in Lafayette. The remaining 29% is expected to stay within the Town of Moraga.

#### *For residential uses*

Of the AM and PM peak hour residential traffic generated by the specific plan area, about 34% of it is expected to stay within the Town of Moraga. Trips leaving the Lamorinda area represent about 53% of the traffic, while 6% is expected to have an origin or destination in Orinda and 5% in Lafayette. About 2% of the peak hour trips would go to/from the Orinda BART station.

#### *For community center uses*

Of the AM and PM peak hour community center traffic generated by the 30,000 square foot community center component of the Proposed Project and Alternatives 3 and 4, 50% of the activities were assumed to be locally-based use i.e., Moraga residents. The remaining activity was considered to be sub-regional based on the household distribution throughout the Lamorinda area with about 45% of the households in Lafayette, 30% in Orinda, and 25% in Moraga. Given these assumptions about 63% of the generated traffic will stay within Moraga, 22% will be toward Lafayette and 15% to Orinda.

## 4.F-2 REGULATORY SETTING

### Contra Costa Transportation Authority Guidelines

The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Agency (CMA) for Contra Costa County. CCTA adopted the county's first Congestion Management Program (CMP) in October 1991. The most recent CMP is referred to as the 2007 CMP Update.

The *Draft Lamorinda Action Plan Update* (DKS Associates, 2008) establishes Multimodal Traffic Service Objectives (MTSOs) for routes of regional significance in Lamorinda. One MTSO used to measure freeway and arterial operations is peak hour Delay Index. Delay Index is defined as the ratio of the peak period travel time to off-peak period travel time on each roadway segment. For example, a Delay Index of 2.0 means that it takes twice as long to travel a particular segment during the peak commute hour than during non-commute hours when traffic moves at free-flow speeds.

While not used for determining CEQA-level intersection impacts, the technical analyst's completed intersection calculations using the CCTA adopted methodology for evaluating signalized intersections. The findings are presented in Appendix D and are provided for informational purposes.

### Evaluation Criteria

Criteria have been established to determine whether the impacts caused by the Project or its alternatives rise to the level of significance.

The Project would have a significant impact on the environment if it would cause an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio (V/C) on roads, or delay/congestion at intersections), or change the condition of an existing street (e.g., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system.

Each jurisdiction (Lafayette, Moraga, and Orinda) sets its own standards to further define an impact. The three communities do not have standards for unsignalized stop-controlled intersections and the CCTA does not require (as part of Measure C) the calculation of LOS at unsignalized stop-controlled intersections. However, there are intersections considered in this study that are stop-controlled. Thus, a LOS criterion is required to describe the intersection's operating characteristics. The standard set-forth in the *Town of Moraga Available Roadway Capacity Study* will be used for stop-controlled intersections. The standards for each jurisdiction are listed in Table 4.F-8 and Table 4.F-9 for signalized and unsignalized intersections, respectively.

**Table 4.E-8**

## Signalized Intersection Level of Service Standards

Area	LOS Standard	V/C Ratio	HCM Control Delay Per Vehicle (Seconds) /4/
Lafayette /1/			
Downtown:	Poor D	0.85 to 0.90	45 to 55 seconds
Outside Downtown:	Good D	0.80 to 0.84	35 to 45 seconds
Orinda /2/			
Central Business District:	Good E	0.90 to 0.94	55 to 68 seconds
Suburban:	Good D	0.80 to 0.84	35 to 45 seconds
Moraga /3/	LOS C	0.75 to 0.79	28 to 35 seconds

Notes:

1 City of Lafayette, General Plan, Growth Management Chapter, Policy C-1.2  
 2 City of Orinda, General Plan, Table 5.1, page 83.  
 3 Town of Moraga General Plan (2002).  
 4 HCM control delay per vehicle obtained from 2000 Highway Capacity Manual.

**Table 4.E-9**

## Unsignalized Intersection Level of Service Standards

Intersection Type	LOS Standard /1/	HCM Control Delay Per Vehicle (Seconds) /2/
<u>All-Way Stop Control</u>		
Overall Intersection	Poor D	30 to 35 seconds
<u>One- and Two-Way Stop Control</u>		
Overall Intersection	Poor C	20 to 25 seconds
Side Street Traffic	Poor E	43 to 50 seconds

Notes:

1. Town of Moraga Available Roadway Capacity Study, Page 11. (Robert L. Harrison Transportation Planning, January 1999)  
 2. HCM control delay per vehicle obtained from 2000 Highway Capacity Manual.

### ***General Project Impacts***

- Would the Project results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks;
- Would substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment);
- Would construction traffic from the Project have a significant, though temporary, impact on the environment or if Project construction would substantially affect traffic flow and circulation, parking, and pedestrian safety;
- Would fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle routes); or
- Would generate added transit ridership that would increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute.
- Would generate parking demands that are inconsistent with adopted municipal code requirements or otherwise cause parking deficiencies that impact uses outside the specific plan area.

Table 4.F-10 presents criteria for analysis of transportation impacts.

**Table 4.F-10**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.F-1. Will the Project create adverse vehicular impacts on designated Routes of Regional Significance?	For each direction of travel: Delay Index (congested travel time divided by uncongested travel time)	Exceed a Delay Index of 2.0 on the SR 4 corridor between I-680 and the Caldecott Tunnel; the Pleasant Hill Road corridor between SR 24 and Taylor Boulevard; and the Camino Pablo corridor between SR 24 and Bear Creek Road.	Draft Lamorinda Action Plan Update (2008)
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	Change in level of service and critical movement delay	<ul style="list-style-type: none"> <li>a. Cause the LOS to drop below LOS C (defined as 35 seconds or more average control delay per vehicle).</li> <li>b. Add additional trips to an intersection operating below the acceptable grade.</li> </ul>	CEQA Checklist XV(a); Contra Costa Transportation Authority Guidelines; Moraga General Plan Guiding Principle 5 (p. 2-2); and interpretation of CEQA case law
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	Change in level of service and critical movement delay.	<p>Side Street Stops</p> <ul style="list-style-type: none"> <li>a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and</li> <li>b. Cause the side street LOS to drop below a “poor” E (50 seconds delay)</li> <li>c. Add additional trips to an intersection operating below the acceptable standard</li> </ul> <p>All-Way Stops</p> <ul style="list-style-type: none"> <li>a. Cause the overall LOS to drop below a “poor” D (35 seconds delay)</li> <li>b. Add additional trips to an intersection operating below the acceptable standard</li> </ul>	CEQA Checklist XV(a); Moraga General Plan Guiding Principle 5 (p. 2-2); and interpretation of CEQA case law
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	Change in the level of service and critical movement delay.	<ul style="list-style-type: none"> <li>a. Lafayette Downtown– Cause the LOS to drop below a “poor” D (defined as 55 seconds or more average delay per vehicle)</li> </ul>	CEQA Checklist XV (a,b); Contra Costa Transportation Authority

**Table 4.F-10**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
		b. Outside Lafayette Downtown -- Cause the LOS to drop below a “good” D (defined as 45 seconds or more average delay per vehicle) d. Add additional trips to an intersection operating below the acceptable grade	Guidelines; City of Lafayette General Plan (2002); and interpretation of CEQA case law
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	Change in level of service and critical movement delay.	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard  All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	CEQA Checklist Item XV (a); City of Lafayette General Plan (2002); and interpretation of CEQA case law
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	Change in level of service and critical movement delay.	a. Central Business District – Cause the LOS to drop below a “good” E (defined as 68 seconds or more average delay per vehicle) b. Suburban Streets -- Cause the LOS to drop below a “good” D (defined as 45 seconds or more average delay per vehicle) c. Add additional trips to an intersection operating below the acceptable grade	CEQA Checklist XV (a,b); Contra Costa County Transportation Authority Guidelines; City of Orinda General Plan (1994); and interpretation of CEQA case law

**Table 4.F-10**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	Change in level of service and critical movement delay.	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard  All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	CEQA Checklist Item XV (a); City of Orinda General Plan (1994); and interpretation of CEQA case law
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	Amount of increased demand for transit service; Reduction of transit availability or interference with existing transit users; Distance from existing or planned transit services, with the potential for generating a demand for such services	Increase demand beyond accepted service standards; Interfere with existing users transits on a permanent or temporary basis	CEQA Checklist XV (g); County Transportation Authority Guidelines; Moraga General Plan Guiding Principle 6, Policy C2.1
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	Number of hazardous road conditions created, access and circulation design, sight distance, turn lanes, traffic controls	Any increase in hazardous road conditions or internal access or circulation below Town and MOFD standards	CEQA Checklist XV (d); Town and MOFD standards
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	Impacts on the use of existing bicycle and/or pedestrian travel ways; Impacts on bicyclist and/or pedestrian access to activity	Cause closure or substantial interference; Substantially reduce bicyclist and/or pedestrian access; Substantially reduce safety for bicyclists and/or pedestrians	CEQA Checklist XV (g); Contra Costa Transportation Authority Guidelines; Moraga General Plan Guiding Principle 6, Policy C1.1

**Table 4.F-10**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
	centers; Impacts on the safety for bicyclists and/or pedestrians		
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	Demand for off-street parking versus the proposed off-street parking supply; Impacts on the availability of on-street parking, either through removal or through increased demand ("spillover") for that existing on-street parking	If the demand is greater than the proposed supply; Cause a substantial reduction in availability of parking	Contra Costa Transportation Authority Guidelines CEQA Checklist XV(f)

## **4.F-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (EXISTING PLUS PROJECT)**

Table 4.F-11 presents the project's traffic volume forecast at each study intersection. Also presented in the Table are the traffic contributions from other traffic components including: existing traffic, traffic from approved developments, and traffic from other cumulative development (consistent with the various general plan documents) that could occur by Year 2030.

Table 4.F-12 presents the LOS results at each study intersection under existing conditions without and with the Action Alternatives. Refer to Section 4.F-4 for a discussion of intersection operations under the Approved and Cumulative Scenarios. The intersection turning movement forecasts with project traffic are provided in Appendix D.

Table 4.F-13 presents potential transportation, circulation, and parking impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for transportation, circulation, and parking conflicts is determined by the potential of the project to exceed current service levels, impede access, and increase vehicular incidents.

**Table 4.F-11**

## Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
<b>Orinda Intersections</b>										
1. Orinda Way/Santa Maria Way	AM	1090	11	74	2	0	1	0	2	0
	PM	1687	33	113	0	0	1	0	0	0
2. Camino Pablo/Santa Maria Way	AM	3479	43	384	7	0	5	2	6	5
	PM	4399	168	620	5	0	5	2	4	18
3. Camino Pablo/BART Driveways	AM	3864	70	719	40	0	48	22	31	5
	PM	4212	151	879	36	0	18	22	30	18
4. Camino Pablo/SR 24 EB Ramps	AM	3528	68	376	40	0	47	22	31	5
	PM	3805	145	617	36	0	18	22	32	18
5. Camino Pablo/ Brookwood Road	AM	3256	61	310	57	0	49	31	48	5
	PM	3938	109	434	65	0	49	39	55	18
6. Camino Pablo/ Moraga Way	AM	2719	64	169	57	0	49	31	48	5
	PM	2804	109	225	65	0	49	39	55	18
7. Brookwood Road/Moraga Way	AM	969	5	84	0	0	0	0	0	0
	PM	1024	6	203	0	0	0	0	0	0
8. Bryant Way/Moraga Way	AM	701	4	39	0	0	0	0	0	0
	PM	681	3	76	0	0	0	0	0	0
9. Glorieta Boulevard/ Moraga Way	AM	2528	60	175	67	0	55	37	55	5
	PM	2486	103	227	75	0	55	45	63	18
10. Ivy Drive/ Moraga Way	AM	1944	29	106	88	0	70	50	75	5
	PM	1798	40	130	86	0	67	45	78	18

**Table 4.F-11**

## Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
12. Glorieta Boulevard/ Rheem Boulevard	AM	965	44	101	-1	0	3	-2	-2	2
	PM	934	76	138	-2	0	5	-1	-3	10
<b>Lafayette Intersections</b>										
13. Deer Hill Drive/Oak Hill Road	AM	2468	26	207	6	0	1	4	5	2
	PM	2377	85	293	6	0	6	3	5	10
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	1993	83	386	9	0	3	5	7	5
	PM	2425	219	678	9	0	9	5	7	20
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	3197	54	259	12	0	2	8	10	0
	PM	3305	168	323	12	0	12	6	10	0
16. Deer Hill Drive/1st Street	AM	2513	37	111	6	0	1	4	5	0
	PM	2717	106	138	6	0	6	3	5	0
17. SR 24 Eastbound On-Ramp/ 1st Street	AM	2358	76	195	20	0	20	11	16	0
	PM	2733	193	259	17	0	11	10	15	0
18. Mt. Diablo Boulevard/ 1st Street	AM	2698	117	333	21	0	21	11	17	2
	PM	2774	321	510	17	0	12	10	15	10
19. First Street/ Golden Gate Way (East)	AM	312	2	5	0	0	0	0	0	0
	PM	269	9	6	0	0	0	0	0	0
20. First Street/ Golden Gate Way (West)	AM	280	0	6	0	0	0	0	0	0
	PM	246	2	5	0	0	0	0	0	0
21. First Street/ Moraga Boulevard	AM	412	0	9	0	0	0	0	0	0
	PM	351	2	7	0	0	0	0	0	0
22. First Street/ School Street	AM	572	0	12	0	0	0	0	0	0
	PM	405	2	8	0	0	0	0	0	0

**Table 4.F-11**

## Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
23. Avalon Avenue/ School Street	AM	496	0	10	0	0	0	0	0	0
	PM	353	0	6	0	0	0	0	0	0
24. Mt. Diablo Boulevard/ Moraga Road	AM	3083	124	406	29	0	25	16	24	7
	PM	3352	282	669	25	0	21	15	22	30
25. Moraga Road/ Moraga Boulevard	AM	2320	91	250	29	0	25	16	24	7
	PM	2041	180	390	26	0	21	16	21	30
26. Moraga Road/ Brook Street	AM	2347	91	248	29	0	25	16	24	7
	PM	2153	180	393	26	0	21	16	21	30
27. Moraga Road/ School Street	AM	2323	91	248	29	0	25	16	24	7
	PM	2112	182	392	26	0	21	16	21	30
28. Moraga Road/ St. Mary's Road (North)	AM	2125	94	248	26	0	24	13	21	7
	PM	1966	186	392	22	0	20	14	17	30
32. St. Mary's Road / Avalon Avenue	AM	747	6	46	-3	0	-1	-3	-3	2
	PM	793	8	70	-4	0	-1	-2	-4	10
33. St. Mary's Road/ Topper Lane	AM	851	6	48	-3	0	-1	-3	-3	2
	PM	832	8	72	-4	0	-1	-2	-4	10
34. Glenside Drive/St. Mary's Road (North)	AM	741	7	34	-4	0	-1	-3	-3	5
	PM	645	9	41	-5	0	-1	-2	-4	20
35. Glenside Drive/ St. Mary's Road (South)	AM	1231	17	113	41	0	35	24	35	5
	PM	1265	24	152	49	0	35	30	43	20
39. Glenside Drive/ Reliez Station Road	AM	1497	24	113	39	0	34	21	32	0
	PM	1289	29	142	46	0	34	28	39	0
40. Glenside Drive/ Burton Drive	AM	1187	17	110	42	0	35	24	35	0
	PM	1079	22	136	50	0	35	30	43	0

**Table 4.F-11**

## Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	3200	60	381	31	0	27	17	25	0
	PM	3168	103	600	29	0	23	17	25	0
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	2177	54	204	33	0	28	19	27	0
	PM	2405	90	320	31	0	23	18	26	0
43. Pleasant Hill Road/ Condit Drive	AM	1860	46	159	33	0	28	19	27	0
	PM	1796	72	218	31	0	23	18	26	0
44. Pleasant Hill Road/ Olympic Boulevard	AM	2311	56	177	40	0	34	21	32	0
	PM	2582	82	248	46	0	33	27	38	0
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	1743	11	74	0	0	1	0	0	3
	PM	2188	33	107	0	0	0	0	0	10
<b>Moraga Intersections</b>										
11. Moraga Way/ Moraga Road	AM	1972	82	209	87	0	50	56	78	14
	PM	2195	109	276	129	0	72	81	114	56
29. Campolindo Drive/Moraga Road	AM	1851	134	147	30	0	28	17	25	5
	PM	1674	194	210	27	0	23	16	22	20
30. Rheem Boulevard/ Moraga Road	AM	1782	71	171	28	0	30	14	23	7
	PM	1871	118	263	27	0	27	16	20	30
31. Moraga Road/St. Mary's Road (South)	AM	1697	55	175	207	0	142	129	181	30
	PM	1762	73	227	267	0	161	167	234	114
36. Bollinger Canyon Road/St. Mary's Road	AM	990	17	171	42	0	35	23	35	5
	PM	933	23	228	49	0	34	29	41	20
37. Rheem Boulevard/St. Mary's Road	AM	1100	20	137	42	0	35	23	35	5
	PM	1038	31	180	49	0	34	29	41	20

Table 4.F-11

## Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
38. St. Mary's Parkway/St. Mary's Road	AM	967	24	107	51	0	40	28	42	14
	PM	1105	34	142	60	0	40	36	51	58
46. Center Street/ Rheem Boulevard	AM	764	31	47	-1	0	1	-3	-3	2
	PM	986	41	67	-1	0	3	-1	-2	10
47. Moraga Road/Ascot Drive	AM	1555	58	128	37	0	34	19	30	7
	PM	1651	91	183	39	0	32	22	30	28
48. Moraga Road/Donald Drive	AM	1497	58	126	37	0	34	19	30	7
	PM	1528	91	182	39	0	32	22	30	28
49. Moraga Road/Corliss Drive	AM	1340	43	106	142	0	92	89	124	18
	PM	1424	57	138	189	0	112	119	166	66
50. Moraga Way/ St. Andrews Drive	AM	1232	29	93	93	0	70	55	80	5
	PM	1401	40	123	104	0	67	63	90	18
51. Moraga Way/ School Street	AM	1069	29	88	93	0	70	55	80	5
	PM	1231	40	119	104	0	67	63	90	18

Notes:

**Bold** font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr &amp; Peers, 2008

Table 4.F-12

## Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
<b>Orinda Intersections</b>											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
2. Camino Pablo/Santa Maria Way	AM	7	A	7	A	7	A	7	A	7	A
	PM	19	B	19	B	19	B	19	B	19	B
3. Camino Pablo/BART Driveways	AM	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)
	PM	2 (27)	A (D)	2 (28)	A (D)	2 (27)	A (D)	2 (27)	A (D)	2 (27)	A (D)
4. Camino Pablo/SR 24 EB Ramps	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM										
5. Camino Pablo/ Brookwood Road	AM	58	E	63	E	63	E	61	E	62	E
	PM	<b>98</b>	<b>F</b>	<b>104</b>	<b>F</b>	<b>103</b>	<b>F</b>	<b>102</b>	<b>F</b>	<b>103</b>	<b>F</b>
6. Camino Pablo/ Moraga Way	AM	13	B	13	B	13	B	13	B	13	B
	PM	17	B	18	B	18	B	17	B	17	B
7. Brookwood Road/Moraga Way	AM	18	C	18	C	18	C	18	C	18	C
	PM	15	C	15	C	15	C	15	C	15	C
8. Bryant Way/Moraga Way	AM	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)
	PM	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)
9. Glorieta Boulevard/ Moraga Way	AM	<b>80</b>	<b>F</b>	<b>87</b>	<b>F</b>	<b>89</b>	<b>F</b>	<b>83</b>	<b>F</b>	<b>85</b>	<b>F</b>
	PM	25	C	28	C	27	C	27	C	27	C
10. Ivy Drive/ Moraga Way	AM	43	D	<b>48</b>	<b>D</b>	<b>48</b>	<b>D</b>	<b>45</b>	<b>D</b>	<b>47</b>	<b>D</b>
	PM	24	C	26	C	25	C	25	C	25	C
12. Glorieta Boulevard/ Rheem Boulevard	AM	11 (20)	B (C)	11 (20)	B (C)	11 (20)	B (C)	11 (20)	A (C)	11 (20)	B (C)
	PM	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)

**Table 4.F-12**

## Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
<b>Lafayette Intersections</b>											
13. Deer Hill Drive/Oak Hill Road	AM	38	E	38	E	38	E	38	E	38	E
	PM	41	E	41	E	41	E	41	E	41	E
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	27	C	27	C	27	C	28	C	27	C
	PM	31	C	31	C	31	C	31	C	31	C
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	32	C	33	C	32	C	32	C	32	C
	PM	30	C	30	C	30	C	30	C	30	C
16. Deer Hill Drive/1st Street	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
17. SR 24 Eastbound On-Ramp/1st Street	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	30	C	30	C	30	C	30	C	30	C
	PM	28	C	28	C	28	C	28	C	28	C
19. First Street/ Golden Gate Way (East)	AM	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)
	PM	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)
21. First Street/ Moraga Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)
23. Avalon Avenue/ School Street	AM	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)
	PM	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)

Table 4.F-12

## Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
24. Mt. Diablo Boulevard/ Moraga Road/3/	AM	51	D	55	D	51	D	54	D	54	D
	PM	53	D	55	D	53	D	55	D	55	D
25. Moraga Road/ Moraga Boulevard/3/	AM	--	E	--	E	--	E	--	E	--	E
	PM	20	B	32	C	27	C	29	C	31	C
26. Moraga Road/ Brook Street/3/	AM	--	E	--	E	--	E	--	E	--	E
	PM	21	C	28	C	27	C	28	C	28	C
27. Moraga Road/ School Street/3/	AM	42	D	44	D	42	D	44	D	44	D
	PM	17	B	28	C	28	C	27	C	28	C
28. Moraga Road/ St. Mary's Road (North) /3/	AM	34	C	36	D	35	C	35	C	36	D
	PM	31	C	35	C	32	C	34	C	35	C
32. St. Mary's Road / Avalon Avenue	AM	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)
	PM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
33. St. Mary's Road/ Topper Lane	AM	3 (25)	A (D)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (D)
	PM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	12	B	12	B	12	B	12	B	12	B
	PM	10	A	10	A	10	A	10	A	10	A
35. Glenside Drive/ St. Mary's Road (South)	AM	21	C	24	C	23	C	23	C	24	C
	PM	21	C	25	C	24	C	23	C	24	C
39. Glenside Drive/ Reliez Station Road	AM	91	F	103	F	102	F	97	F	100	F
	PM	49	E	58	F	57	F	55	F	57	F
40. Glenside Drive/ Burton Drive	AM	34	D	43	E	42	E	39	E	41	E
	PM	25	D	32	D	29	D	29	D	31	D
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	14	B	14	B	14	B	14	B	14	B
	PM	18	B	18	B	18	B	18	B	18	B

**Table 4.F-12**

## Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
42. Pleasant Hill Rd/ Old Tunnel Rd- SR	AM	10	A	10	A	10	A	10	A	10	A
24 Eastbound Off-Ramp	PM	11	B	11	B	11	B	11	B	11	B
43. Pleasant Hill Road/ Condit Drive	AM	9	A	9	A	9	A	9	A	9	A
	PM	7	A	7	A	7	A	7	A	7	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	55	F	60	F	62	F	58	F	59	F
	PM	48	E	52	F	49	E	50	F	51	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	25	C	25	C	25	C	25	C	25	C
	PM	35	C	35	C	35	C	35	C	35	C
<b>Moraga Intersections</b>											
11. Moraga Way/ Moraga Road	AM	25	C	26	C	25	C	26	C	26	C
	PM	28	C	31	C	29	C	30	C	31	C
29. Campolindo Drive/Moraga Road	AM	18	B	18	B	18	B	18	B	18	B
	PM	14	B	14	B	14	B	14	B	14	B
30. Rheem Boulevard/ Moraga Road	AM	21	C	21	C	21	C	21	C	21	C
	PM	20	C	20	C	20	C	20	C	20	C
31. Moraga Road/St. Mary's Road (South)	AM	12	B	14	B	13	B	13	B	14	B
	PM	12	B	14	B	13	B	14	B	14	B
36. Bollinger Canyon Road/St. Mary's Road	AM	1 (20)	A (C)	1 (21)	A (C)	1 (22)	A (C)	1 (21)	A (C)	1 (21)	A (C)
	PM	1 (16)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (17)	A (C)
37. Rheem Boulevard/St. Mary's Road	AM	5 (25)	A (D)	6 (30)	A (D)	6 (27)	A (D)	6 (27)	A (D)	6 (29)	A (D)
	PM	5 (26)	A (D)	6 (30)	A (D)	5 (28)	A (D)	5 (28)	A (D)	5 (29)	A (D)
38. St. Mary's Parkway/St. Mary's Road	AM	4 (15)	A (C)	4 (18)	A (C)	4 (16)	A (C)	4 (17)	A (C)	4 (17)	A (C)
	PM	6 (15)	A (C)	6 (17)	A (C)	6 (15)	A (C)	6 (16)	A (C)	6 (16)	A (C)

Table 4.F-12

## Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
46. Center Street/ Rheem Boulevard	AM	8	A	8	A	8	A	8	A	8	A
	PM	10	B	10	B	10	B	10	B	10	B
47. Moraga Road/Ascot Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
48. Moraga Road/Donald Drive	AM	11	B	12	B	11	B	11	B	12	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	23 (200)	C (F)	<b>38 (377)</b>	E (F)	<b>31 (293)</b>	<b>D (F)</b>	<b>33 (312)</b>	<b>D (F)</b>	<b>36 (354)</b>	E (F)
	PM	6 (59)	A (F)	12 (149)	A (F)	8 (87)	A (F)	10 (115)	A (F)	11 (131)	B (F)
50. Moraga Way/ St. Andrews Drive	AM	11	B	12	B	12	B	11	B	11	B
	PM	12	B	12	B	12	B	12	B	12	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	11	B	11	B	11	B	11	B

Notes:

**Bold** font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

/3/ These intersections were evaluated using the SimTraffic component of the SYNCHRO software to account for the field observed vehicle queue length fluctuations, school children crossings, left-turn conflicts, and unique signal timing parameters. Delay for LOS D or better based on the average of 5 random runs. Delay for LOS E or F is not reported because of variability between runs.

Source: Fehr & Peers, 2008

**Table 4.F-13**

## Transportation, Circulation, and Parking Impacts –All Alternatives

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact /1/</b>	<b>Level of Significance /2/</b>
4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?	Exceed a Delay Index of 2.0 on the SR 4 corridor between I-680 and the Caldecott Tunnel; the Pleasant Hill Road corridor between SR 24 and Taler Boulevard; and the Camino Pablo corridor between SR 24 and Bear Creek Road.	P	Proposed Project ● Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	a. Cause the LOS to drop below LOS C (defined as 35 seconds or more average control delay per vehicle). b. Add additional trips to an intersection operating below the acceptable grade.	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard  All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

**Table 4.F-13**

## Transportation, Circulation, and Parking Impacts –All Alternatives

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact /1/</b>	<b>Level of Significance /2/</b>
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	<ul style="list-style-type: none"> <li>a. Lafayette Downtown -- Cause the LOS to drop below a “poor” D (defined as 55 seconds of delay)</li> <li>b. Outside Lafayette Downtown -- Cause the LOS to drop below a “good” D (defined as 45 seconds delay)</li> <li>c. Add additional trips to an intersection operating below the acceptable standard</li> </ul>	P	<ul style="list-style-type: none"> <li>Proposed Project ●</li> <li>Alternative 1 (No Project - Existing Conditions) ==</li> <li>Alternative 2 (323 Unit Alternative - GP Development Level) ●</li> <li>Alternative 3 (400 Unit Alternative) ●</li> <li>Alternative 4 (560 Unit Alternative) ●</li> </ul>
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	<ul style="list-style-type: none"> <li>Side Street Stops <ul style="list-style-type: none"> <li>a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and</li> <li>b. Cause the side street LOS to drop below a “poor” E (50 seconds delay)</li> <li>c. Add additional trips to an intersection operating below the acceptable standard</li> </ul> </li>   <li>All-Way Stops <ul style="list-style-type: none"> <li>a. Cause the overall LOS to drop below a “poor” D (35 seconds delay)</li> <li>b. Add additional trips to an intersection operating below the acceptable standard</li> </ul> </li> </ul>	P	<ul style="list-style-type: none"> <li>Proposed Project ○</li> <li>Alternative 1 (No Project - Existing Conditions) ==</li> <li>Alternative 2 (323 Unit Alternative - GP Development Level) ○</li> <li>Alternative 3 (400 Unit Alternative) ○</li> <li>Alternative 4 (560 Unit Alternative) ○</li> </ul>
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	<ul style="list-style-type: none"> <li>a. Central Business District – Cause the LOS to drop below a “good” E (defined as 68 seconds delay)</li> <li>b. Suburban Streets -- Cause the LOS to drop below a “good” D (defined as 45 seconds delay)</li> <li>c. Add additional trips to an intersection operating below the acceptable standard</li> </ul>	P	<ul style="list-style-type: none"> <li>Proposed Project ●</li> <li>Alternative 1 (No Project - Existing Conditions) ==</li> <li>Alternative 2 (323 Unit Alternative - GP Development Level) ●</li> <li>Alternative 3 (400 Unit Alternative) ●</li> <li>Alternative 4 (560 Unit Alternative) ●</li> </ul>

**Table 4.F-13**

## Transportation, Circulation, and Parking Impacts –All Alternatives

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact /1/</b>	<b>Level of Significance /2/</b>
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	<p>Side Street Stops</p> <p>a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and</p> <p>b. Cause the side street LOS to drop below a “poor” E (50 seconds delay)</p> <p>c. Add additional trips to an intersection operating below the acceptable standard</p> <p>All-Way Stops</p> <p>a. Cause the overall LOS to drop below a “poor” D (35 seconds delay)</p> <p>b. Add additional trips to an intersection operating below the acceptable standard</p>	P	<p>Proposed Project ○</p> <p>Alternative 1 (No Project - Existing Conditions) ==</p> <p>Alternative 2 (323 Unit Alternative - GP Development Level) ○</p> <p>Alternative 3 (400 Unit Alternative) ○</p> <p>Alternative 4 (560 Unit Alternative) ○</p>
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	Increase demand beyond accepted service standards; Interfere with existing users transits on a permanent or temporary basis; Be located more than $\frac{3}{4}$ miles away from transit services	P	<p>Proposed Project ○</p> <p>Alternative 1 (No Project - Existing Conditions) ==</p> <p>Alternative 2 (323 Unit Alternative - GP Development Level) ○</p> <p>Alternative 3 (400 Unit Alternative) ○</p> <p>Alternative 4 (560 Unit Alternative) ○</p>
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	Any increase in hazardous road conditions. Internal access or circulation below Town and MOFD standards	P	<p>Proposed Project ⊖</p> <p>Alternative 1 (No Project - Existing Conditions) ==</p> <p>Alternative 2 (323 Unit Alternative - GP Development Level) ⊖</p> <p>Alternative 3 (400 Unit Alternative) ⊖</p> <p>Alternative 4 (560 Unit Alternative) ⊖</p>

**Table 4.F-13**

## Transportation, Circulation, and Parking Impacts –All Alternatives

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact /1/</b>	<b>Level of Significance /2/</b>
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	Cause closure or substantial interference; Substantially reduce bicyclist and/or pedestrian access; Substantially reduce safety for bicyclists and/or pedestrians	P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	If the demand is greater than the proposed supply; Cause a substantial reduction in availability of parking	P	Proposed Project ◎ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎

Notes: /1/ Type of Impact:

C Construction

P Permanent

/2/ Level of Significance:

● Significant impact before and after mitigation

◎ Significant impact before mitigation; less than significant impact after mitigation

○ Less than significant impact; no mitigation proposed

== No impact

**Impact:** **4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

State Route 24: The Project and all the Action Alternatives add traffic to SR 24 during the AM and PM peak hours as follows:

	<b>Eastbound</b>	<b>Westbound</b>
<b>Proposed Project</b>		
AM Peak	28 vehicles (max)	30 vehicles (max)
PM Peak	30 vehicles (max)	26 vehicles (max)
<b>Alternative 2 (339 Unit Alternative)</b>		
AM Peak	38 vehicles (max)	38 vehicles (max)
PM Peak	30 vehicles (max)	30 vehicles (max)
<b>Alternative 3 (400 Unit Alternative)</b>		
AM Peak	15 vehicles (max)	16 vehicles (max)
PM Peak	17 vehicles (max)	16 vehicles (max)
<b>Alternative 4 (560 Unit Alternative)</b>		
AM Peak	22 vehicles (max)	22 vehicles (max)
PM Peak	23 vehicles (max)	24 vehicles (max)

The added trips to SR 24 would increase the Delay Index by up to 0.01. The Delay Index on SR 24 would remain below 2.0 in the AM and PM peak hours under the Proposed Project and Action Alternatives, with the exception of the westbound direction in the AM peak hour. Therefore, this is considered a Significant Impact.

Pleasant Hill Road: The Proposed Project and Action Alternatives add traffic to Pleasant Hill Road during the AM and PM peak hours as follows:

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	<b>Eastbound</b>	<b>Westbound</b>
<b>Proposed Project</b>		
AM Peak	3 vehicles (max)	4 vehicles (max)
PM Peak	3 vehicles (max)	3 vehicles (max)
<b>Alternative 2 (339 Unit Alternative)</b>		
AM Peak	2 vehicles (max)	5 vehicles (max)
PM Peak	4 vehicles (max)	1 vehicles (max)
<b>Alternative 3 (400 Unit Alternative)</b>		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	2 vehicles (max)	2 vehicles (max)
<b>Alternative 4 (560 Unit Alternative)</b>		
AM Peak	3 vehicles (max)	3 vehicles (max)
PM Peak	3 vehicles (max)	3 vehicles (max)

**Camino Pablo:** The Proposed Project and Action Alternatives add traffic to Camino Pablo during the AM and PM peak hours as follows:

	<b>Eastbound</b>	<b>Westbound</b>
<b>Proposed Project</b>		
AM Peak	2 vehicles (max)	3 vehicles (max)
PM Peak	6 vehicles (max)	6 vehicles (max)
<b>Alternative 2 (339 Unit Alternative)</b>		
AM Peak	1 vehicles (max)	2 vehicles (max)
PM Peak	2 vehicles (max)	1 vehicles (max)
<b>Alternative 3 (400 Unit Alternative)</b>		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	5 vehicles (max)	5 vehicles (max)
<b>Alternative 4 (560 Unit Alternative)</b>		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	6 vehicles (max)	6 vehicles (max)

The added trips to Camino Pablo would increase the Delay Index by up to 0.01. The Delay Index on Camino Pablo would remain below 2.0 in the AM and PM peak hours under the Proposed Project and Action Alternatives. Therefore, this is considered a Less than Significant Impact.

**Mitigation:** No mitigation is available.

**After**

**Mitigation:** *Significant and Unavoidable; Proposed Project and All Action Alternatives*

There is no mitigation measure available to reduce the AM impacts to westbound SR 24 traffic to a less than significant level. Therefore, this impact would be significant and unavoidable. This impact was anticipated in the Town of Moraga 2002 General Plan EIR, and the Town adopted a statement of overriding considerations in Resolution 21-2002. The Proposed Project and Alternatives 3 and 4 would generate less impact to SR 24 than Alternative 2.

**Impact:** **4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

All signalized intersections in Moraga will operate at acceptable levels with the added traffic from the Proposed Project or Action Alternatives.

**Mitigation:** No mitigation is required.

**Impact:** **4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the Town of Moraga?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Moraga Road/Corliss Drive (intersection #49): The minimum acceptable overall intersection operation is LOS C with 25 seconds of vehicle delay. The Proposed Project and the Action Alternatives would add vehicle trips to this intersection and would have the following operational impacts.

In addition, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives, and the side street operations would also be unacceptable LOS F for both the AM and PM hours. The unacceptable intersection operation represents a Significant Impact.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	C	23	--	A	6	--
Proposed Project	<b>E</b>	<b>38</b>	<b>160</b>	A	12	255
Alternative 2 (339 Unit Alternative)	<b>D</b>	<b>31</b>	<b>92</b>	A	8	112
Alternative 3 (400 Unit Alternative)	<b>D</b>	<b>33</b>	<b>107</b>	A	10	185
Alternative 4 (560 Unit Alternative)	<b>E</b>	<b>36</b>	<b>142</b>	A	11	232

**Mitigation:** **4.F-3: Install a traffic signal with the current lane configuration at the Corliss Drive/Moraga Way intersection.**

The signal shall have actuated controls. Signal phasing and coordination shall be determined during signal design. Installation shall include the traffic signal equipment with optimized signal phasing/timing plans and coordination with adjacent traffic signals. Traffic signal equipment shall include ADA compliant features. The intersection shall be reconstructed as necessary to accommodate the traffic signal installation including consideration for pedestrians and bicyclists. Signal installation shall meet Contra Costa County design standards and be subject to the review and approval of the Town and County. The full complement of signal warrants shall be investigated prior to signal installation.

This mitigation measure is currently in Moraga's fee program. The Project Applicant is responsible for the fair share contribution to this measure as determined by the fee program in effect at the time permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected Project's impact, then the Project Applicant shall fully fund and construct the mitigation measure, and shall be reimbursed for the portion that is beyond their fair share contribution, from future available funding sources.

**After**

**Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Road/Corliss Drive intersection will operate at LOS B with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

**Impact:** **4.F-4. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Lafayette?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Moraga Road/Moraga Boulevard (intersection #25): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	<b>E</b>	--	--	C	20	--
Proposed Project	<b>E</b>	--	<b>36</b>	C	32	56
Alternative 2 (339 Unit Alternative)	<b>E</b>	--	<b>25</b>	C	27	21
Alternative 3 (400 Unit Alternative)	<b>E</b>	--	<b>23</b>	C	29	46
Alternative 4 (560 Unit Alternative)	<b>E</b>	--	<b>31</b>	C	31	51

The poor intersection operations in the AM peak hour are due, in part, to the school-related traffic; although vehicle queues at adjacent intersections also impact intersection operations.

While the intersection would continue to operate at LOS E with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact.

Moraga Road/Brook Street (intersection #26): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

The poor intersection operations in the AM peak hour are due, in part, to the school-related traffic; although vehicle queues at adjacent intersections also impact intersection operations.

While the intersection would continue to operate at LOS E with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	<b>E</b>	--	--	C	21	--
Proposed Project	<b>E</b>	--	<b>36</b>	C	28	56
Alternative 2 (339 Unit Alternative)	<b>E</b>	--	<b>25</b>	C	27	21
Alternative 3 (400 Unit Alternative)	<b>E</b>	--	<b>23</b>	C	28	46
Alternative 4 (560 Unit Alternative)	<b>E</b>	--	<b>31</b>	C	28	51

**Mitigation: 4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program.**

No mitigation is available to reduce this impact to a less than significant level. Moraga's General Plan Adoption Resolution 21-2002 made findings that general plan-level development would cause significant and unavoidable intersection impacts in the City of Lafayette.

While no feasible mitigation measures for the study intersections listed above have been identified, measures could be imposed to lessen the project's impact on the road system to traffic levels at or below the travel levels predicted under general plan buildout.

Transit Service: Enhanced transit service in the Lamorinda area, south of SR 24, would be needed to further reduce the traffic effects from the Proposed Project and Alternative 3 (560 unit). The current service, operated by County Connection, operates buses with 20 minute headways during peak school and commute times, but service is reduced to one hour (or less) during non-peak times. Enhanced service in Lamorinda could have stylized buses that are 30 feet or less in length; transit stop amenities; real-time bus information; reduced headways; up to 16 hours of weekday and weekend service; reduced fares such as the Eco-Pass Program provided by AC Transit; and patron parking at select transit stops.

The transit component of the CCTA model was used to estimate bus ridership increases with an enhanced transit service. Bus headways for Route 106 and Route 206 in the CCTA model were reduced to 10 minutes and 20 minutes during the on- and off-peak periods, respectively. With these changes, the CCTA model indicates that daily bus ridership would increase by about 1,130 riders. At an average occupancy of 1.2 people per car, the increased ridership would reduce daily automobile traffic in the area by about 950 cars.

Enhanced transit service requires capital and operating costs, beyond what a single land development project could provide. A successful system

would require financial support from residents, businesses, and governmental agencies.

Community Center: As an alternative to the enhanced transit service described above, the proposed community center program could be reduced to decrease AM and PM peak hour traffic volumes. The Proposed Project, Alternative 3 and Alternative 4 each propose a 30,000 square foot community center that would attract users from outside the Town of Moraga. This is expected to result in 7 and 30 vehicle trips on Moraga Road through Lafayette during the AM and PM peak hours, respectively. Changing the community center program to a local-focus and reducing the size to about 16,000 square feet would eliminate these peak hour trips; thereby reducing the community center's impact on roads and intersections located in Lafayette. With these reductions alone (e.g., without the proposed transit improvements), both Alternative 3 and Alternative 4 would be less impacting than Alternative 2 (the general plan alternative) during the critical AM peak hour.

Therefore, under Alternatives 3 and 4, either enhanced transit service or community center program reductions could be used to reduce increased traffic volumes to at or below Alternative 2 levels. The Proposed Project would require the enhanced transit service to reduce traffic levels to at or below Alternative 2 levels, but could also use a reduction in the community center program to reduce the amount of new transit that would be required.

#### After

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated below, intersection and road improvement mitigation measures (e.g., those listed below) necessary to reduce the impacts to the Moraga Road corridor do not have local support for implementation. Measures identified above would not reduce the impact to a less than significant level, but would reduce impacts from the Proposed Project and Action Alternatives (as necessary) to levels at or below those predicted for the General Plan alternative. Therefore, this impact would remain significant and unavoidable under both the Proposed Project and all Action Alternatives.

Several measures were considered over the years to improve both existing and future traffic flow on Moraga Road through Downtown Lafayette. These measures were debated extensively in the Lamorinda community during the preparation of the *Lamorinda Traffic Study* (August 1, 1994) and ultimately rejected by the community. Some of the key measures considered and rejected include:

- Oak Hill Road Extension. This project would have extended Oak Hill Road south from Mt. Diablo Boulevard, intersecting Moraga Road at the La Fiesta Square retail driveway. Subsequent to the

community rejecting this alternative, Lafayette approved this area for redevelopment.

- First Street Extension. There were several variations of this project considered. One variation would have extended First Street to Moraga Road via the Moraga Boulevard alignment. Another would have introduced a new connection north of Moraga Boulevard. A third variation would have extended First Street south from School Street, intersecting either Moraga Road or St. Mary's Road. Subsequent to the community rejecting these alternatives, the City of Lafayette converted First Street to one-way southbound between Golden Gate Way and School Street. In addition, the City constructed a separated path along the corridor for pedestrians and bicycles.
- Moraga Road Widening. There were several alternatives considered for widening Moraga Road through Downtown Lafayette to provide turn lanes and bike lanes. Consideration was also given to eliminating left turn movements at driveways and intersections. While these measures were rejected, the physical environment along the corridor has not changed since the Lamorinda Traffic Study.
- Moraga Road Extension. An extension of Moraga Road north of Mt. Diablo Boulevard to a collector/distributor road was considered. The collector/distributor road would intersect Oak Hill Road opposite the SR 24 Eastbound Off-Ramp and at First Street opposite the Eastbound On-Ramp. While this measure was rejected, the physical environment along the corridor has not changed since the Lamorinda Traffic Study.
- Pleasant Hill Road Extension. Alternatives were considered for extending Pleasant Hill Road south of Olympic Boulevard to provide another connection between Lamorinda and the regional road system in an effort to divert traffic away from Downtown Lafayette and St. Mary's Road. Subsequent to the community rejecting this alternative, the City of Lafayette approved a single family housing development with its main access to Olympic Boulevard at Pleasant Hill Road.

**Impact:** **4.F-5. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Lafayette?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

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Deer Hill Drive /Oak Hill Road (intersection #13): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Existing Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Existing	<b>E</b>	<b>38</b>	--	<b>E</b>	<b>41</b>	--
Proposed Project	<b>E</b>	<b>38</b>	8	<b>E</b>	<b>41</b>	16
Alternative 2 (339 Unit Alternative)	<b>E</b>	<b>38</b>	1	<b>E</b>	<b>41</b>	6
Alternative 3 (400 Unit Alternative)	<b>E</b>	<b>38</b>	6	<b>E</b>	<b>41</b>	13
Alternative 4 (560 Unit Alternative)	<b>E</b>	<b>38</b>	7	<b>E</b>	<b>41</b>	15

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at unacceptable LOS E; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Reliez Station Road (intersection #39): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Existing Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Existing	<b>F</b>	<b>91</b>	--	<b>E</b>	<b>49</b>	--
Proposed Project	<b>F</b>	<b>103</b>	39	<b>F</b>	<b>58</b>	46
Alternative 2 (339 Unit Alternative)	<b>F</b>	<b>102</b>	34	<b>F</b>	<b>57</b>	34
Alternative 3 (400 Unit Alternative)	<b>F</b>	<b>97</b>	21	<b>F</b>	<b>55</b>	28
Alternative 4 (560 Unit Alternative)	<b>F</b>	<b>100</b>	32	<b>F</b>	<b>57</b>	39

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

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Because the intersection would continue to operate at LOS E or F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Burton Drive (intersection #40): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Existing Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Existing	D	34	--	D	25	--
Proposed Project	E	43	42	D	32	50
Alternative 2 (339 Unit Alternative)	E	42	35	D	29	35
Alternative 3 (400 Unit Alternative)	E	39	24	D	29	30
Alternative 4 (560 Unit Alternative)	E	41	35	D	31	43

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM peak hour for the Proposed Project and all Action Alternatives.

Because the intersection would deteriorate from LOS D to E in the AM peak hour; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Pleasant Hill Road/Olympic Boulevard (intersection #44): The minimum acceptable operation for this intersection is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

<b>Impact Summary – Existing Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Existing	F	55	--	E	48	--
Proposed Project	F	60	40	F	52	46
Alternative 2 (339 Unit Alternative)	F	62	34	E	49	33
Alternative 3 (400 Unit Alternative)	F	58	21	F	50	27
Alternative 4 (560 Unit Alternative)	F	59	32	F	51	38

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

**Mitigation:** **4.F-5: Install traffic signals at the following Lafayette intersections: Deer Hill Drive/Oak Hill Road (with the current lane configuration), Glenside Drive/Reliez Station Road (widen Glenside Drive for a left turn pocket), Glenside Drive/Burton Drive (widen Glenside Drive for a left turn pocket), and Pleasant Hill Road/Olympic Boulevard (with the current lane configuration).**

The signals shall have actuated controls. Signal phasing and coordination shall be determined during signal design. Installation shall include the traffic signal equipment with optimized signal phasing/timing plans and coordination with adjacent traffic signals. Traffic signal equipment shall include ADA compliant features. The intersection shall be reconstructed as necessary to accommodate the traffic signal installation including consideration for pedestrians and bicyclists. Signal installation shall meet Contra Costa County design standards and be subject to the review and approval of Lafayette and County. The full complement of signal warrants shall be investigated prior to signal installation.

This mitigation measure is not currently in Lamorinda's fee program. The fee program should be updated to incorporate this mitigation measure. The Project Applicant is then responsible for the fair share contribution to this mitigation measure as determined by the updated fee program. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected Project's impact, then the Project Applicant shall fully fund and construct the mitigation measure, and shall be reimbursed for the portion that is beyond their fair share contribution, from future available funding sources.

**After**

**Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

The four unsignalized Lafayette intersections will operate at acceptable conditions with traffic signal installation. Therefore, with mitigation, this impact would be less than significant. However, this mitigation measure would remain Significant and Unavoidable if Lafayette does not add the proposed intersection improvements to the Lamorinda fee program.

**Impact:** 4.F-6. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Orinda?

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Camino Pablo/Brookwood Road (intersection #5): The minimum acceptable operation for this intersection is LOS E with 68 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	E	58	--	F	98	--
Proposed Project	E	63	62	F	104	83
Alternative 2 (339 Unit Alternative)	E	63	49	E	103	49
Alternative 3 (400 Unit Alternative)	E	61	36	F	102	57
Alternative 4 (560 Unit Alternative)	E	62	53	F	103	73

While the intersection would continue to operate at LOS F during the PM peak hour with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the PM peak hour is a Significant Impact

Glorietta Boulevard/Moraga Way (intersection #9): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	F	80	--	C	25	--
Proposed Project	F	87	72	C	28	93
Alternative 2 (339 Unit Alternative)	F	89	55	C	27	55
Alternative 3 (400 Unit Alternative)	F	83	42	C	27	63
Alternative 4 (560 Unit Alternative)	F	85	60	C	27	81

The poor intersection operations are due, in part, to the school-related traffic turning to/from Glorieta Boulevard.

While the intersection would continue to operate at LOS F with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact

Ivy Drive/Moraga Way (intersection #10): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	D	43	--	C	24	--
Proposed Project	<b>D</b>	<b>48</b>	<b>93</b>	C	26	104
Alternative 2 (339 Unit Alternative)	<b>D</b>	<b>48</b>	<b>70</b>	C	25	67
Alternative 3 (400 Unit Alternative)	<b>D</b>	<b>45</b>	<b>55</b>	C	25	63
Alternative 4 (560 Unit Alternative)	<b>D</b>	<b>47</b>	<b>80</b>	C	25	90

The poor intersection operations are due, in part, to the school-related traffic turning to/from Ivy Drive. While the AM peak hour intersection operations would remain LOS D, the addition of vehicle trips in the AM peak hour reduces the delay to an unacceptable level and is therefore a Significant Impact

**Mitigation:** **4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program.**

Mitigation Measure 4.F-4 provided for impacts to Lafayette intersections that also apply to Orinda intersections. No mitigation is available to reduce this impact to a less than significant level. Moraga's General Plan Adoption Resolution 21-2002 made findings that general plan-level development would cause significant and unavoidable intersection impacts in the City of Orinda.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated below, intersection and road improvement mitigation measures (e.g., those listed below) necessary to reduce the impacts to the Moraga Way corridor do not have local support for implementation. Measures

identified above would not reduce the impact to a less than significant level, but would reduce impacts from the Proposed Project and Action Alternatives (as necessary) to levels at or below those predicted for the General Plan alternative. Therefore, this impact would remain significant and unavoidable under both the Proposed Project and all Action Alternatives.

Several measures were considered over the years to improve both existing and future traffic flow on Moraga Way through Orinda. These measures were debated extensively in the Lamorinda community during the preparation of the *Lamorinda Traffic Study* (August 1, 1994) and ultimately rejected by the community. Some of the key measures considered and rejected include:

- Gateway Boulevard Extension. This project would have extended Gateway Boulevard from SR 24 south to the Town of Moraga, and included an extension of Brookside Road. This extension would have diverted traffic from Moraga Way, improving operations at the three impacted intersections. Subsequent to rejecting this alternative, Orinda approved an alternative land development plan, precluding this extension.
- SR 24 Eastbound Off-Ramp Widening. Several years back the City of Orinda considered widening the SR 24 eastbound Off-Ramp to provide three lanes at its intersection with Camino Pablo (two lanes currently exist). The project was rejected by the City of Orinda for a variety of reasons including concerns regarding noise and aesthetics.

**Impact:** **4.F-7. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Orinda?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

All unsignalized study intersections will operate at acceptable levels with the addition of traffic from the Project and all of the Action Alternatives

**Mitigation:** No mitigation is required.

**Impact:** **4.F-8. Will the Project create adverse transit impacts?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives would add additional transit riders to the County Connection (Route 106). The number of riders would generally be less than 10 patrons per hour even at peak times, and the buses currently operate at less than 50% occupancy. Therefore, there will be adequate seating on each bus to accommodate the additional riders, and the increased boarding activity will not negatively impact transit headways. This represents a Less than Significant Impact.

Enhanced transit service is discussed as a potential mitigation for Proposed Project and Action Alternative impacts (see Measure 4.F-4). Increased transit ridership would require capital and operating costs beyond what a single land development project could provide. A successful system would require financial support from residents, businesses, and governmental agencies. County Connection's Service Expansion Policy (2000) requires that all new or improved service requested by private entities shall be fully subsidized by the private entity.

**Mitigation:** No mitigation is required.

**Impact:** **4.F-9. Will the Project create hazards due to design features or will access and/or internal circulation be unsatisfactory?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to internal circulation can not be identified at this time.

The project, because it is mixed use, will likely be built in phases to meet market demands. The road system supporting each development needs to be constructed to serve the new development areas and to ensure logical circulation for residents, patrons, guests, workers, and others including emergency providers.

Therefore, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

**Mitigation:** **4.F-9: Ensure Adequate Internal Circulation within the MCSP.**

Implement the following measures:

- Minimize the cul-de-sac streets in both commercial and residential areas. Where cul-de-sac streets are constructed, provide a

pedestrian connection through the street to maximize pedestrian circulation.

- Maintain streets for two-way traffic flow.
- Allow on-street parking to the greatest extent possible.
- Design streets to meet local fire district Codes.
- Provide the Laguna Creek crossing, connecting the Village area to the Town Center, when areas west of the creek are developed; in order to minimize internal traffic from using Moraga Way.
- Provide a second road connection to the Village area from Moraga Way between Laguna Creek and Camino Ricardo; in order to maintain effective emergency circulation.
- Provide a connection between the Town Center area and the St. Mary's/Moraga Road intersection when either the Laguna Creek crossing is constructed or the Town Center area east of the creek begins to be developed; in order to maintain safe and efficient traffic flow to and from Moraga Road.
- Provide a School Street extension from the St. Mary's/Moraga Road intersection to Moraga Way and maintain this corridor as a through street; in order to minimize cumulative and site-generated traffic impacts on the Moraga Way/Moraga Road intersection.

#### After

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Implementation of the measures listed above would ensure adequate internal circulation and would reduce potential traffic hazards. Therefore, with mitigation, this impact would be less than significant.

**Impact:** **4.F-10. Will the Project create adverse impacts on the use of bicycle and/or pedestrian travel ways?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to bicycle and pedestrian use can not be identified at this time. So, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

Two alternative site locations have been proposed for the community center. Site "A" is located immediately south of the St. Mary's Road

intersection with Moraga Road. Site “B” is located several hundred feet north of St. Mary’s Road along Moraga Road, opposite the Moraga Commons. The Moraga Road intersection with St. Mary’s Road provides a controlled pedestrian connection between Site “A” and the Commons. There is no pedestrian crossing between Site “B” and the Commons. This impact is considered to be potentially significant.

**Mitigation: 4.F-10a: Reduce Potential Vehicular Conflicts with Bicycles and Pedestrian Travel Ways.**

Implement the following measures:

- Limit the number of driveways (to the extent possible) between intersections; thereby, reducing the number of intersecting conflict points for vehicles, bicycles, and pedestrians.
- Provide parallel rather than angle parking on roadways with Class II bike lanes or Class III bike routes.
- Provide bicycle detection and pedestrian countdown signal heads at signalized intersections.
- Provide bicycle parking near commercial entrances, transit stops, and/or on sidewalks (in street furniture zone)
- Provide 12-foot width for designated multi-use trails i.e., shared bicycle and pedestrian use.
- Provide continuous pedestrian walkways on all streets.
- Minimize corner radii at intersections to the greatest extent possible.
- Provide ADA-compliant ramps at all intersections with sidewalks and/or paths to maintain continuous accessible paths.
- Maintain 6-foot pedestrian zones along commercial and residential streets.
- Maintain a minimum 4-foot wide ADA compliant pedestrian zone across driveways on streets with sidewalks.
- Minimize lane width on streets without bike designations to the greatest extent possible while still complying with fire district requirements.
- Provide pedestrian-scale lighting along all pedestrian facilities in the commercial and residential areas.

**Mitigation: 4.F-10b: Provide an enhanced pedestrian crossing on Moraga Road between the community center Site “B” and the Moraga Commons.**

The enhanced crossing may include advanced warning signs and flashing beacons, advanced limit lines, high visibility markings, and in-pavement

flashers. The crossing shall be designed for the prevailing traffic speed on Moraga Road, and it shall be incorporated into a pedestrian path system at a logical location for crossing that maximizes pedestrian route directness.

**After****Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

Implementation of the measures above would ensure adequate bicycle and pedestrian circulation and would reduce potential traffic hazards. Therefore, with mitigation, this impact would be less than significant.

**Impact:** **4.F-11. Will the Project create adverse vehicular parking impacts?****Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to parking can not be identified at this time. Therefore, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

**Mitigation:** **4.F-11: Provide Adequate Parking Supplies.**

Provide a parking management plan that shows the expected parking demands and the required parking supply to meet the expected demands. Consideration should be given to meeting the Town Code unless parking studies approved by the Town support parking supply adjustments.

**After****Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

Implementation of the measure above would ensure adequate parking supply and would reduce potential parking impacts. Therefore, with mitigation, this impact would be less than significant.

## 4.F-4 CUMULATIVE IMPACTS

There are several Project impacts – either less than significant or significant – identified in Section: 4.F-3 Environmental Impacts and Mitigation Measures (Existing plus Project). These same impacts would also occur under the two future baseline scenarios considered in the study: Approved Baseline and Cumulative Baseline. The assumed land uses for each of these scenarios is provided in Table 4.F-4 and Table 4.F-5, respectively.

Table 4.F-14 presents the intersection LOS results at each study intersection under Approved scenario, and Table 4.F-15 presents the same information for the Cumulative scenario. Refer to Appendix D for the resulting intersection turning movement forecasts at the study intersections.

Table 4.F-11 presents the traffic contributions at each study intersection from the project and other traffic components including: existing traffic, traffic from approved developments, and traffic from other cumulative development (consistent with the various general plan documents) that could occur by Year 2030.

**Impact:** **4.F-C1. Will the Project create adverse vehicular impacts on Routes of Regional Significance in the Cumulative Baseline?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

State Route 24: The Project and all the Action Alternatives add traffic to SR 24 during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3 the Delay Index on SR 24 exceeds the acceptable 2.0 threshold in the westbound direction during the AM peak hour and in both the east and westbound directions during the PM peak hour. This is considered a Significant Impact.

Pleasant Hill Road: The Project and Action Alternatives add traffic to this corridor during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3, the Delay Index on Pleasant Hill Road exceeds the acceptable 2.0 threshold in the southbound direction during the AM peak hour and in both the north and southbound directions during the PM peak hour. This is considered a Significant Impact.

Camino Pablo: The Project and Action Alternatives add traffic to Camino Pablo during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3, the Delay Index will remain better than the 2.0 threshold. This is considered a Less than Significant Impact.

**Mitigation:** No mitigation is available.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

While Camino Pablo would continue to operate within acceptable levels under the Cumulative condition, both SR 24 and Pleasant Hill Road would substantially exceed their thresholds, and any added traffic to these two corridors would be considered to be significant and unavoidable. The Proposed Project and Alternatives 3 and 4 would generate less impact on the Routes of Regional Significance than Alternative 2.

**Impact:** **4.F-C2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga for either the Approved or Cumulative Baselines?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

All signalized intersection in Moraga will operate at acceptable levels for the Approved Baseline with the added traffic from the Proposed Project or any of the Action Alternatives.

One signalized intersection in Moraga will operate at an unacceptable level for the Cumulative Baseline with the added traffic from the Proposed Project or any of the Action Alternatives.

**Moraga Way/Moraga Road (intersection #11):** The minimum acceptable operation for this intersection is LOS C with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	C	33	--	D	38	--
Proposed Project	D	36	101	D	47	185
Alternative 2 (339 Unit Alternative)	C	35	50	D	41	72
Alternative 3 (400 Unit Alternative)	D	36	70	D	44	135
Alternative 4 (560 Unit Alternative)	D	37	92	D	46	170

The deterioration in AM peak hour LOS from C to D combined with the continued LOS D operations during the PM peak hour with the Proposed

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Project and the Action Alternatives, and the addition of vehicle trips in the AM and PM peak hours is a Significant Impact

**Mitigation:** **4.F-C2: School Street shall remain open to general vehicle circulation between Moraga Way and Moraga Road at St. Mary's Road.**

**After**

**Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Way approach to Moraga Road would need to be widened to provide two left-turn lanes and one right-turn lane unless School Street remains open to general vehicle use between Moraga Way and Moraga Road at St. Mary's Road.

**Impact:** **4.F-C3. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the Town of Moraga?**

**Analysis:** *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

One unsignalized intersection in Moraga will operate at an unacceptable level for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Moraga Road/Corliss Drive (intersection #49): The minimum acceptable overall intersection operation is LOS C with 25 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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**Impact Summary – Approved Plus Project**

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	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	<b>D</b>	<b>28</b>	--	A	7	--
Proposed Project	<b>E</b>	<b>45</b>	<b>160</b>	B	15	255
Alternative 2 (339 Unit Alternative)	<b>E</b>	<b>37</b>	<b>92</b>	A	10	112
Alternative 3 (400 Unit Alternative)	<b>E</b>	<b>39</b>	<b>107</b>	B	12	185
Alternative 4 (560 Unit Alternative)	<b>E</b>	<b>43</b>	<b>142</b>	B	14	232

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Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	<b>E</b>	<b>50</b>	--	B	15	--
Proposed Project	<b>F</b>	<b>73</b>	<b>160</b>	<b>D</b>	<b>31</b>	<b>255</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	<b>64</b>	<b>92</b>	C	22	112
Alternative 3 (400 Unit Alternative)	<b>F</b>	<b>66</b>	<b>107</b>	<b>D</b>	<b>26</b>	<b>185</b>
Alternative 4 (560 Unit Alternative)	<b>F</b>	<b>72</b>	<b>142</b>	<b>D</b>	<b>29</b>	<b>232</b>

In addition, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives, and the side street operations would also be unacceptable LOS F for both the AM and PM hours. The unacceptable intersection operations represents a Significant Impact for the both the Approved and Cumulative Baseline scenarios.

**Mitigation:** **4.F-C3 Implement Mitigation Measure 4.F-3.**

**After**

**Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Road/Corliss Drive intersection will operate at LOS C or better with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

**Impact:** **4.F-C4. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Lafayette?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Five signalized intersection in Lafayette will operate at unacceptable levels for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Mt. Diablo Boulevard/Moraga Road (intersection #24): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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**Impact Summary – Approve Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/Moraga Boulevard (intersection #25): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

**Impact Summary – Approve Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

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<b>Impact Summary – Cumulative Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Cumulative	<b>F</b>	--	--	<b>F</b>	--	--
Proposed Project	<b>F</b>	--	<b>36</b>	<b>F</b>	--	<b>56</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	--	<b>25</b>	<b>F</b>	--	21
Alternative 3 (400 Unit Alternative)	<b>F</b>	--	<b>23</b>	<b>F</b>	--	<b>46</b>
Alternative 4 (560 Unit Alternative)	<b>F</b>	--	<b>31</b>	<b>F</b>	--	<b>51</b>

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/Brook Street (intersection #26): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Approve Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Approved	<b>F</b>	--	--	<b>F</b>	--	--
Proposed Project	<b>F</b>	--	<b>36</b>	<b>F</b>	--	<b>56</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	--	<b>25</b>	<b>F</b>	--	21
Alternative 3 (400 Unit Alternative)	<b>F</b>	--	<b>23</b>	<b>F</b>	--	<b>46</b>
Alternative 4 (560 Unit Alternative)	<b>F</b>	--	<b>31</b>	<b>F</b>	--	<b>51</b>

<b>Impact Summary – Cumulative Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Cumulative	<b>F</b>	--	--	<b>F</b>	--	--
Proposed Project	<b>F</b>	--	<b>36</b>	<b>F</b>	--	<b>56</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	--	<b>25</b>	<b>F</b>	--	21
Alternative 3 (400 Unit Alternative)	<b>F</b>	--	<b>23</b>	<b>F</b>	--	<b>46</b>
Alternative 4 (560 Unit Alt)	<b>F</b>	--	<b>31</b>	<b>F</b>	--	<b>51</b>

**MORAGA CENTER SPECIFIC PLAN**

## DRAFT ENVIRONMENTAL IMPACT REPORT

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/School Street (intersection #27): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Approve Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Approved	<b>F</b>	--	--	<b>F</b>	--	--
Proposed Project	<b>F</b>	--	<b>36</b>	<b>F</b>	--	<b>56</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	--	<b>25</b>	<b>F</b>	--	21
Alternative 3 (400 Unit Alternative)	<b>F</b>	--	<b>23</b>	<b>F</b>	--	<b>46</b>
Alternative 4 (560 Unit Alternative)	<b>F</b>	--	<b>31</b>	<b>F</b>	--	<b>51</b>

<b>Impact Summary – Cumulative Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Cumulative	<b>F</b>	--	--	<b>F</b>	--	--
Proposed Project	<b>F</b>	--	<b>36</b>	<b>F</b>	--	<b>56</b>
Alternative 2 (339 Unit Alternative)	<b>F</b>	--	<b>25</b>	<b>F</b>	--	21
Alternative 3 (400 Unit Alternative)	<b>F</b>	--	<b>23</b>	<b>F</b>	--	<b>46</b>
Alternative 4 (560 Unit Alternative)	<b>F</b>	--	<b>31</b>	<b>F</b>	--	<b>51</b>

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/St. Mary's Road North (intersection #28): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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DRAFT ENVIRONMENTAL IMPACT REPORT

**Impact Summary – Approve Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

**Mitigation:** No mitigation is available. Refer to Impact 4.F-4 for additional discussion.

Moraga's Resolution 21-2002 stated that general plan-level development would cause significant and unavoidable intersection impacts in the City of Lafayette.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated in Impact 4.F-4, mitigation measures necessary to reduce the impacts to the Moraga Road corridor do not have local support for implementation. Therefore, this impact is significant and unavoidable.

**Impact:** 4.F-C5. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Lafayette?

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Five unsignalized intersection in Lafayette will operate at unacceptable levels for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Deer Hill Drive /Oak Hill Road (intersection #13): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	E	39	--	E	47	--
Proposed Project	E	39	8	E	48	16
Alternative 2 (339 Unit Alternative)	E	39	1	E	47	6
Alternative 3 (400 Unit Alternative)	E	39	6	E	48	13
Alternative 4 (560 Unit Alternative)	E	39	7	E	48	15

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	39	--	F	60	--
Proposed Project	E	39	8	F	62	16
Alternative 2 (339 Unit Alternative)	E	39	1	F	61	6
Alternative 3 (400 Unit Alternative)	E	39	6	F	62	13
Alternative 4 (560 Unit Alternative)	E	39	7	F	62	15

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F; the addition of any trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/St. Mary's Road South (intersection #35): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	C	22	--	C	22	--
Proposed Project	D	26	46	D	28	69
Alternative 2 (339 Unit Alternative)	C	25	35	D	26	35
Alternative 3 (400 Unit Alternative)	C	24	29	C	25	50
Alternative 4 (560 Unit Alternative)	C	25	40	D	27	63

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	40	--	F	44	--
Proposed Project	E	48	46	F	55	69
Alternative 2 (339 Unit Alternative)	E	46	35	F	50	35
Alternative 3 (400 Unit Alternative)	E	46	29	F	51	50
Alternative 4 (560 Unit Alternative)	E	48	40	F	52	63

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F with cumulative traffic; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

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Glenside Drive/Reliez Station Road (intersection #39): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

<b>Impact Summary – Approved Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Approved	F	98	--	F	56	--
Proposed Project	F	110	39	F	65	46
Alternative 2 (339 Unit Alternative)	F	109	34	F	63	34
Alternative 3 (400 Unit Alternative)	F	104	21	F	61	28
Alternative 4 (560 Unit Alternative)	F	108	32	F	63	39

<b>Impact Summary – Cumulative Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Cumulative	F	146	--	F	102	--
Proposed Project	F	159	39	F	109	46
Alternative 2 (339 Unit Alternative)	F	157	34	F	111	34
Alternative 3 (400 Unit Alternative)	F	152	21	F	107	28
Alternative 4 (560 Unit Alternative)	F	156	32	F	109	39

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Burton Drive (intersection #40): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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DRAFT ENVIRONMENTAL IMPACT REPORT

**Impact Summary – Approved Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	E	38	--	D	28	--
Proposed Project	E	45	42	D	35	50
Alternative 2 (339 Unit Alternative)	E	45	35	D	32	35
Alternative 3 (400 Unit Alternative)	E	43	24	D	32	30
Alternative 4 (560 Unit Alternative)	E	44	35	D	34	43

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	44	--	F	57	--
Proposed Project	F	76	42	F	65	50
Alternative 2 (339 Unit Alternative)	F	78	35	F	63	35
Alternative 3 (400 Unit Alternative)	F	70	24	F	61	30
Alternative 4 (560 Unit Alternative)	F	76	35	F	65	43

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would deteriorate from LOS D to E in the AM peak hour; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Pleasant Hill Road/Olympic Boulevard (intersection #44): The minimum acceptable operation for this intersection is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

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**Impact Summary – Approved Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	59	--	F	52	--
Proposed Project	F	65	40	F	55	46
Alternative 2 (339 Unit Alternative)	F	66	34	F	53	33
Alternative 3 (400 Unit Alternative)	F	62	21	F	54	27
Alternative 4 (560 Unit Alternative)	F	64	32	F	55	38

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	92	--	F	73	--
Proposed Project	F	95	40	F	76	46
Alternative 2 (339 Unit Alternative)	F	98	34	F	74	33
Alternative 3 (400 Unit Alternative)	F	95	21	F	76	27
Alternative 4 (560 Unit Alternative)	F	95	32	F	76	38

**Mitigation:** **4.F-C5 Implement Mitigation 4.F-5 and Install traffic signals at the Glenside Drive/St. Mary's Road South intersection (also widen St. Mary's Road for a left turn pocket)**

**After**

**Mitigation:** *Less than Significant; Proposed Project and All Action Alternatives*

The five unsignalized Lafayette intersections will operate at acceptable conditions with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

**Impact:** **4.F-C6. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Orinda?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

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## DRAFT ENVIRONMENTAL IMPACT REPORT

**Analysis: Significant Impact; Proposed Project and All Action Alternatives**

Camino Pablo/Brookwood Road (intersection #5): The minimum acceptable operation for this intersection is LOS E with 68 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

<b>Impact Summary – Approved Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Approved	E	64	--	F	115	--
Proposed Project	<b>E</b>	<b>70</b>	<b>62</b>	<b>F</b>	<b>122</b>	<b>83</b>
Alternative 2 (339 Unit Alternative)	E	69	49	F	120	49
Alternative 3 (400 Unit Alternative)	E	67	36	F	119	53
Alternative 4 (560 Unit Alternative)	<b>E</b>	<b>69</b>	<b>31</b>	<b>F</b>	<b>121</b>	<b>73</b>

<b>Impact Summary – Cumulative Plus Project</b>						
	<b>AM Peak Hour</b>			<b>PM Peak Hour</b>		
	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>	<b>LOS</b>	<b>Delay</b>	<b>Trips</b>
Cumulative	F	92	--	F	163	--
Proposed Project	F	100	62	F	172	83
Alternative 2 (339 Unit Alternative)	F	98	49	F	169	49
Alternative 3 (400 Unit Alternative)	F	96	36	F	170	53
Alternative 4 (560 Unit Alternative)	F	97	31	F	171	73

While the intersection would continue to operate at LOS F during the PM peak hour with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the PM peak hour is a Significant Impact

Glorietta Boulevard/Moraga Way (intersection #9): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

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**DRAFT ENVIRONMENTAL IMPACT REPORT**
**Impact Summary – Approved Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	88	--	C	27	--
Proposed Project	F	94	72	C	29	93
Alternative 2 (339 Unit Alternative)	F	97	55	C	28	55
Alternative 3 (400 Unit Alternative)	F	91	42	C	28	63
Alternative 4 (560 Unit Alternative)	F	93	60	C	29	81

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	123	--	D	39	--
Proposed Project	F	132	72	D	43	93
Alternative 2 (339 Unit Alternative)	F	135	55	D	42	55
Alternative 3 (400 Unit Alternative)	F	130	42	D	42	63
Alternative 4 (560 Unit Alternative)	F	129	60	D	43	81

While the intersection would continue to operate at LOS F with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact

Ivy Drive/Moraga Way (intersection #10): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

The addition of vehicle trips in the AM peak hour is a Significant Impact. In addition, the AM peak hour intersection operations would deteriorate from LOS D to LOS E with the Proposed Project and the Action Alternatives. This too is considered a Significant Impact

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DRAFT ENVIRONMENTAL IMPACT REPORT

**Impact Summary – Approved Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	D	44	--	C	24	--
Proposed Project	<b>D</b>	<b>51</b>	<b>93</b>	C	27	104
Alternative 2 (339 Unit Alternative)	<b>D</b>	<b>51</b>	<b>70</b>	C	27	67
Alternative 3 (400 Unit Alternative)	<b>D</b>	<b>48</b>	<b>55</b>	C	26	63
Alternative 4 (560 Unit Alternative)	<b>D</b>	<b>50</b>	<b>80</b>	C	27	96

**Impact Summary – Cumulative Plus Project**

	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	D	61	--	C	30	--
Proposed Project	<b>E</b>	<b>72</b>	<b>93</b>	D	37	104
Alternative 2 (339 Unit Alternative)	<b>E</b>	<b>72</b>	<b>70</b>	C	34	67
Alternative 3 (400 Unit Alternative)	<b>E</b>	<b>66</b>	<b>55</b>	C	34	63
Alternative 4 (560 Unit Alternative)	<b>E</b>	<b>70</b>	<b>80</b>	D	35	96

**Mitigation:** No mitigation is available. Refer to Impact 4.F-6.

Moraga's Resolution 21-2002 stated that general plan-level development would cause significant and unavoidable intersection impacts in the City of Orinda.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated in Impact 4.F-6, mitigation measures necessary to reduce the impacts to the Moraga Way corridor do not have local support for implementation. Therefore, this impact is significant and unavoidable.

**Impact:** **4.F-C7. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Orinda?**

**Analysis:** *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

**Analysis:** *No Impact; Proposed Project and All Action Alternatives*

All unsignalized study intersections will operate at acceptable levels with the addition of traffic from the Project and all of the Action Alternatives

**Mitigation:** No mitigation is required.

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
<b>Orinda Intersections</b>											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
2. Camino Pablo/Santa Maria Way	AM	7	A	7	A	7	A	7	A	7	A
	PM	22	C	22	C	22	C	22	C	22	C
3. Camino Pablo/BART Driveways	AM	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)
	PM	3 (28)	A (D)	3 (29)	A (D)	3 (29)	A (D)	3 (29)	A (D)	3 (29)	A (D)
4. Camino Pablo/SR 24 EB Ramps	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM										
5. Camino Pablo/ Brookwood Road	AM	64	E	<b>70</b>	E	<b>69</b>	E	67	E	<b>69</b>	E
	PM	<b>115</b>	F	<b>122</b>	F	<b>120</b>	F	<b>119</b>	F	<b>121</b>	F
6. Camino Pablo/ Moraga Way	AM	13	B	13	B	13	B	13	B	13	B
	PM	18	B	18	B	18	B	18	B	18	B
7. Brookwood Road/Moraga Way	AM	18	C	18	C	18	C	18	C	18	C
	PM	15	C	15	C	15	C	15	C	15	C
8. Bryant Way/Moraga Way	AM	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)
	PM	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)
9. Glorietta Boulevard/ Moraga Way	AM	<b>88</b>	F	<b>94</b>	F	<b>97</b>	F	<b>91</b>	F	<b>93</b>	F
	PM	27	C	29	C	28	C	28	C	29	C
10. Ivy Drive/ Moraga Way	AM	44	D	<b>51</b>	ED	<b>51</b>	D	<b>50</b>	D	<b>50</b>	D
	PM	24	C	27	C	27	C	26	C	27	C

**Table 4.F-14**

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
12. Glorieta Boulevard/ Rheem Boulevard	AM	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)
	PM	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)
<b>Lafayette Intersections</b>											
13. Deer Hill Drive/Oak Hill Road	AM	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>
	PM	<b>47</b>	<b>E</b>	<b>48</b>	<b>E</b>	<b>47</b>	<b>E</b>	<b>48</b>	<b>E</b>	<b>48</b>	<b>E</b>
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	28	C	28	C	28	C	28	C	28	C
	PM	33	C	34	C	34	C	34	C	34	C
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	33	C	34	C	33	C	34	C	34	C
	PM	32	C	33	C	33	C	33	C	33	C
16. Deer Hill Drive/1st Street	AM	12	B	12	B	12	B	12	B	12	B
	PM	17	B	17	B	17	B	17	B	17	B
17. SR 24 Eastbound On-Ramp/1st Street	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	31	C	31	C	31	C	31	C	31	C
	PM	29	C	29	C	29	C	29	C	29	C
19. First Street/ Golden Gate Way (East)	AM	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)
	PM	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street/ Moraga Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
23. Avalon Avenue/ School Street	AM	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)
	PM	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)
24. Mt. Diablo Boulevard/ Moraga Road	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
25. Moraga Road/ Moraga Boulevard	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
26. Moraga Road/ Brook Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
27. Moraga Road/ School Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
28. Moraga Road/ St. Mary's Road (North)	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
32. St. Mary's Road / Avalon Avenue	AM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
	PM	2 (19)	A (C)	2 (20)	A (C)	2 (19)	A (C)	2 (20)	A (C)	2 (20)	A (C)
33. St. Mary's Road/ Topper Lane	AM	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)
	PM	2 (19)	A (C)	2 (20)	A (C)	2 (19)	A (C)	2 (20)	A (C)	2 (20)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	12	B	12	B	12	B	12	B	12	B
	PM	10	A	10	A	10	A	10	A	10	A
35. Glenside Drive/ St. Mary's Road (South)	AM	22	C	26	D	25	C	24	C	25	C
	PM	22	C	28	D	26	D	25	C	27	D
39. Glenside Drive/ Reliez Station Road	AM	98	F	110	F	109	F	104	F	108	F
	PM	56	F	65	F	63	F	61	F	63	F

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
40. Glenside Drive/ Burton Drive	AM	38	E	45	E	45	E	43	E	44	E
	PM	28	D	35	D	32	D	32	D	34	D
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	14	B	14	B	14	B	14	B	14	B
	PM	18	B	18	B	18	B	18	B	18	B
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	12	B	12	B	12	B	12	B
43. Pleasant Hill Road/ Condit Drive	AM	9	A	9	A	9	A	9	A	9	A
	PM	7	A	7	A	7	A	7	A	7	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	59	F	65	F	66	F	62	F	64	F
	PM	52	F	55	F	53	F	54	F	55	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	25	C	25	C	25	C	25	C	25	C
	PM	35	C	35	C	35	C	35	C	35	C
<b>Moraga Intersections</b>											
11. Moraga Way/ Moraga Road	AM	26	C	28	C	27	C	28	C	28	C
	PM	30	C	33	C	31	C	32	C	33	C
29. Campolindo Drive/Moraga Road	AM	22	C	22	C	22	C	22	C	22	C
	PM	17	B	17	B	17	B	17	B	17	B
30. Rheem Boulevard/ Moraga Road	AM	21	C	21	C	21	C	21	C	21	C
	PM	21	C	21	C	21	C	21	C	21	C
31. Moraga Road/St. Mary's Road (South)	AM	13	B	14	B	14	B	14	B	14	B
	PM	12	B	15	B	13	B	14	B	15	B
36. Bollinger Canyon Road/St. Mary's Road	AM	1 (21)	A (C)	1 (22)	A (C)	1 (22)	A (C)	1 (22)	A (C)	1 (22)	A (C)
	PM	1 (17)	A (C)	1 (18)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (18)	A (C)

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
37. Rheem Boulevard/St. Mary's Road	AM	6 (26)	A (D)	6 (31)	A (D)	6 (30)	A (D)	6 (29)	A (D)	6 (31)	A (D)
	PM	5 (27)	A (D)	6 (32)	A (D)	6 (30)	A (D)	5 (31)	A (D)	6 (31)	A (D)
38. St. Mary's Parkway/St. Mary's Road	AM	4 (16)	A (C)	4 (18)	A (C)	4 (16)	A (C)	4 (17)	A (C)	4 (18)	A (C)
	PM	6 (15)	A (C)	6 (17)	A (C)	6 (16)	A (C)	6 (17)	A (C)	6 (17)	A (C)
46. Center Street/ Rheem Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	10	B	10	B	10	B	10	B	10	B
47. Moraga Road/Ascot Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
48. Moraga Road/Donald Drive	AM	12	B	12	B	12	B	12	B	12	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	<b>28 (247)</b>	<b>D (F)</b>	<b>45 (445)</b>	<b>E (F)</b>	<b>37 (352)</b>	<b>E (F)</b>	<b>39 (372)</b>	<b>E (F)</b>	<b>43 (419)</b>	<b>E (F)</b>
	PM	7 (73)	A (F)	15 (190)	B (F)	10 (111)	A (F)	12 (147)	B (F)	14 (175)	B (F)
50. Moraga Way/ St. Andrews Drive	AM	11	B	12	B	12	B	11	B	12	B
	PM	12	B	12	B	12	B	12	B	12	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	11	B	11	B	11	B	11	B

Notes:

**Bold** font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr &amp; Peers, 2008

Table 4.F-15

## Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
<b>Orinda Intersections</b>											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	16	B	16	B	16	B	16	B	16	B
2. Camino Pablo/Santa Maria Way	AM	8	A	8	A	8	A	8	A	8	A
	PM	51	D	52	D	51	D	52	D	52	D
3. Camino Pablo/BART Driveways	AM	1 (24)	A (C)	1 (24)	A (C)	1 (25)	A (C)	1 (24)	A (C)	1 (24)	A (C)
	PM	22 (171)	C (F)	23 (174)	C (F)	22 (174)	C (F)	23 (174)	C (F)	23 (174)	C (F)
4. Camino Pablo/SR 24 EB Ramps	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM										
5. Camino Pablo/ Brookwood Road	AM	92	F	100	F	98	F	96	F	97	F
	PM	163	F	172	F	169	F	170	F	171	F
6. Camino Pablo/ Moraga Way	AM	15	B	15	B	15	B	15	B	15	B
	PM	21	C	21	C	21	C	21	C	21	C
7. Brookwood Road/Moraga Way	AM	23	C	23	C	23	C	23	C	23	C
	PM	24	C	24	C	24	C	24	C	24	C
8. Bryant Way/Moraga Way	AM	6 (20)	A (C)	6 (20)	A (C)	6 (20)	A (C)	6 (21)	A (C)	6 (20)	A (C)
	PM	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)
9. Glorietta Boulevard/ Moraga Way	AM	123	F	132	F	135	F	130	F	129	E
	PM	39	D	43	D	42	D	42	D	43	D
10. Ivy Drive/ Moraga Way	AM	61	E	72	E	72	E	66	E	70	E
	PM	30	C	37	D	34	D	34	C	35	D

**Table 4.F-15**

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
12. Glorietta Boulevard/ Rheem Boulevard	AM	17 (33)	C (D)	19 (37)	C (E)	18 (35)	C (D)	18 (35)	C (D)	18 (35)	C (D)
	PM	7 (21)	A (C)	7 (22)	A (C)	7 (21)	A (C)	7 (21)	A (C)	7 (21)	A (C)
<b>Lafayette Intersections</b>											
13. Deer Hill Drive/Oak Hill Road	AM	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>	<b>39</b>	<b>E</b>
	PM	<b>60</b>	<b>F</b>	<b>62</b>	<b>F</b>	<b>61</b>	<b>F</b>	<b>62</b>	<b>F</b>	<b>62</b>	<b>F</b>
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	31	C	32	C	32	C	32	C	32	C
	PM	42	D	43	D	43	D	43	D	43	D
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	44	D	44	D	44	D	44	D	44	D
	PM	49	D	50	D	50	D	50	D	50	D
16. Deer Hill Drive/1st Street	AM	14	B	15	B	15	B	15	B	15	B
	PM	21	C	21	C	21	C	21	C	21	C
17. SR 24 Eastbound On-Ramp/1st Street	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	33	C	33	C	34	C	33	C	33	C
	PM	32	C	33	C	32	C	33	C	33	C
19. First Street/ Golden Gate Way (East)	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street/ Moraga Boulevard	AM	10	A	10	A	10	A	10	A	10	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
23. Avalon Avenue/ School Street	AM	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)
	PM	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)
24. Mt. Diablo Boulevard/ Moraga Road	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
25. Moraga Road/ Moraga Boulevard	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
26. Moraga Road/ Brook Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
27. Moraga Road/ School Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
28. Moraga Road/ St. Mary's Road (North)	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
32. St. Mary's Road / Avalon Avenue	AM	2 (21)	A (C)	2 (21)	A (C)	2 (20)	A (C)	2 (20)	A (C)	2 (20)	A (C)
	PM	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)
33. St. Mary's Road/ Topper Lane	AM	4 (32)	A (D)	4 (32)	A (D)	4 (33)	A (D)	4 (32)	A (D)	4 (32)	A (D)
	PM	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	13	B	13	B	13	B	13	B	13	B
	PM	11	B	11	B	11	B	11	B	11	B
35. Glenside Drive/ St. Mary's Road (South)	AM	40	E	48	E	46	E	46	E	48	E
	PM	44	E	55	F	50	E	51	F	52	F
39. Glenside Drive/ Reliez Station Road	AM	146	F	159	F	157	F	152	F	156	F
	PM	102	F	109	F	111	F	107	F	109	F
40. Glenside Drive/ Burton Drive	AM	44	E	76	F	78	F	70	F	76	F
	PM	57	F	65	F	63	F	61	F	65	F

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR	AM	18	B	18	B	18	B	18	B	18	B
24 Eastbound On-Ramp	PM	26	C	26	C	26	C	26	C	26	C
42. Pleasant Hill Rd/ Old Tunnel Rd- SR	AM	10	A	11	B	11	B	10	A	10	A
24 Eastbound Off-Ramp	PM	13	B	13	B	13	B	13	B	13	B
43. Pleasant Hill Road/ Condit Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	92	F	95	F	98	F	95	F	95	F
	PM	73	F	76	F	74	F	76	F	76	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	30	C	30	C	30	C	30	C	30	C
	PM	39	D	39	D	39	D	39	D	39	D
<b>Moraga Intersections</b>											
11. Moraga Way/ Moraga Road	AM	33	C	36	D	35	C	36	D	37	D
	PM	38	D	47	D	41	D	44	D	46	D
29. Campolindo Drive/Moraga Road	AM	24	C	24	C	24	C	24	C	24	C
	PM	20	B	21	C	20	C	20	C	20	C
30. Rheem Boulevard/ Moraga Road	AM	23	C	23	C	23	C	23	C	23	C
	PM	23	C	23	C	23	C	23	C	23	C
31. Moraga Road/St. Mary's Road (South)	AM	14	B	17	B	16	B	16	B	16	B
	PM	14	B	19	B	16	B	18	B	18	B
36. Bollinger Canyon Road/St. Mary's Road	AM	5 (32)	A (D)	5 (36)	A (E)	5 (34)	A (D)	5 (34)	A (D)	5 (35)	A (D)
	PM	3 (22)	A (C)	3 (25)	A (C)	3 (24)	A (C)	3 (23)	A (C)	3 (24)	A (C)
37. Rheem Boulevard/St. Mary's Road	AM	12 (59)	B (F)	14 (72)	B (F)	14 (71)	B (F)	13 (68)	B (F)	14 (72)	B (F)
	PM	14 (79)	B (F)	20 (117)	C (F)	17 (95)	C (F)	18 (107)	C (F)	18 (107)	C (F)

Table 4.F-15

## Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
38. St. Mary's Parkway/St. Mary's Road	AM	4 (18)	A (C)	4 (21)	A (C)	4 (19)	A (C)	4 (21)	A (C)	4 (21)	A (C)
	PM	6 (18)	A (C)	8 (22)	A (C)	7 (19)	A (C)	7 (21)	A (C)	7 (22)	A (C)
46. Center Street/ Rheem Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	10	A	10	A	10	A	10	A	10	A
47. Moraga Road/Ascot Drive	AM	11	B	11	B	11	B	11	B	11	B
	PM	9	A	9	A	9	A	9	A	9	A
48. Moraga Road/Donald Drive	AM	13	B	13	B	13	B	13	B	13	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	<b>50 (444)</b>	<b>E (F)</b>	<b>73 (723)</b>	<b>F (F)</b>	<b>64 (606)</b>	<b>F (F)</b>	<b>66 (627)</b>	<b>F (F)</b>	<b>72 (704)</b>	<b>F (F)</b>
	PM	15 (162)	B (F)	<b>31 (387)</b>	<b>D (F)</b>	22 (251)	C (F)	<b>26 (314)</b>	<b>D (F)</b>	<b>29 (365)</b>	<b>D (F)</b>
50. Moraga Way/ St. Andrews Drive	AM	13	B	13	B	13	B	13	B	13	B
	PM	13	B	14	B	14	B	14	B	14	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	12	B	13	B	13	B	13	B	13	B

Notes:

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr &amp; Peers, 2008

## **4.F-5 PREPARERS AND REFERENCES**

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Transportation, Circulation and Parking Technical Worksheets for Moraga Center Specific Plan (Fehr & Peers, 2008)

## 4.G AIR QUALITY

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This section discusses the current air quality regulations and addresses air quality constraints on construction of and improvements to facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. This air quality analysis was prepared in accordance with the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines.

### 4.G-1 ENVIRONMENTAL SETTING

#### Air Pollution Climatology

The quality of the air in a region is determined by several factors. Every air basin or sub-air basin has a number of natural characteristics that limit the ability of natural processes to either dilute or transport air pollutants. The amount of pollutants emitted will also determine air quality. The major determinants of transport and dilution are climatic factors such as wind, atmospheric stability, terrain that influences air movement, and sunshine. Winds and terrain can combine to transport pollutants from upwind areas, while sunshine can create photochemical pollutants such as ozone.

Moraga's climate is largely determined by its location on the southwest edge of the Diablo Valley. The mountains to the west partially block the flow of marine air from the west, giving the area a warmer, less cloudy climate in the summer and cooler temperatures in the winter, compared to areas to the west. As with most interior valleys, winds are generally light, with wind speeds averaging about 5 miles per hour annually.

Pollution potential is relatively high. On winter evenings, light winds combined with surface-based inversions and terrain that restricts air flow can cause pollutant levels to build up. In the summer months, ozone and ozone precursors are often transported into the area from the Central Bay Area.

#### Air Pollution and Air Quality Standards

The Federal Clean Air Act (FCAA) of 1970 (amended in 1977 and 1990) established national ambient air quality standards (NAAQS), and the 1969 Mulford-Carrol Act and California Clean Air Act (CCAA) established California ambient air quality standards (CAAQS) for different pollutants. NAAQS were established for six criteria pollutants: carbon monoxide (CO), ozone (O<sub>3</sub>); nitrogen dioxide (NO<sub>2</sub>), particulate matter with a diameter less than 10 microns (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). Recently, the United States Environmental Protection Agency (US EPA) added fine particulate matter or PM<sub>2.5</sub> as a criteria pollutant. Air quality studies generally focus on five pollutants that are most commonly measured and regulated: CO, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, and suspended particulate, i.e., PM<sub>10</sub> and PM<sub>2.5</sub>.

Pollutants regulated under the CCAA are similar to those regulated under the FCAA. In many cases, California standards are more stringent than the national standards. NAAQS and CAAQS are shown in Table 4.G-1. Both the NAAQS and CAAQS have been adopted by BAAQMD.

**Table 4.G-1**

California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards <sup>(a)</sup>	
			Primary <sup>(b,c)</sup>	Secondary <sup>(b,d)</sup>
Ozone	8-hour	0.07 ppm (154 $\mu\text{g}/\text{m}^3$ )	0.075 ppm (176 $\mu\text{g}/\text{m}^3$ )	—
	1-hour	0.09 ppm (180 $\mu\text{g}/\text{m}^3$ )	--*	Same as primary
Carbon monoxide	8-hour	9 ppm (10 mg/ $\text{m}^3$ )	9 ppm (10 mg/ $\text{m}^3$ )	—
	1-hour	20 ppm (23 mg/ $\text{m}^3$ )	35 ppm (40 mg/ $\text{m}^3$ )	—
Nitrogen dioxide	Annual	—	0.053 ppm (100 $\mu\text{g}/\text{m}^3$ )	Same as primary
	1-hour	0.25 ppm (470 $\mu\text{g}/\text{m}^3$ )	—	—
Sulfur dioxide	Annual	—	0.03 ppm (80 $\mu\text{g}/\text{m}^3$ )	—
	24-hour	0.04 ppm (105 $\mu\text{g}/\text{m}^3$ )	0.14 ppm (365 $\mu\text{g}/\text{m}^3$ )	—
	3-hour	—	—	0.5 ppm (1,300 $\mu\text{g}/\text{m}^3$ )
	1-hour	0.25 ppm (655 $\mu\text{g}/\text{m}^3$ )	—	—
PM <sub>10</sub>	Annual	20 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	Same as primary
	24-hour	50 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$	Same as primary
PM <sub>2.5</sub>	Annual	12 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$	—
	24-hour	—	35 $\mu\text{g}/\text{m}^3$ **	—
Lead	Calendar quarter	—	1.5 $\mu\text{g}/\text{m}^3$	Same as primary
	30-day average	1.5 $\mu\text{g}/\text{m}^3$	—	—

Source: BAAQMD

\* The national 1-hour ozone standard was revoked by US EPA on June 15, 2005.

\*\* The U.S. EPA implemented a more stringent national 24-hour PM<sub>2.5</sub> standard on December 17, 2006, revising it from 65  $\mu\text{g}/\text{m}^3$  to 35  $\mu\text{g}/\text{m}^3$ .

Carbon Monoxide (CO). CO, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Automobile exhaust and residential wood burning in fireplaces and woodstoves emit most of the CO in the Bay Area. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. The highest CO concentrations measured in the Bay Area are typically recorded during the winter.

Ozone (O<sub>3</sub>). O<sub>3</sub>, a colorless toxic gas, is the chief component of urban smog. O<sub>3</sub> enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. O<sub>3</sub> also damages vegetation by inhibiting growth. Although O<sub>3</sub> is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gas (ROG) and nitrogen oxides (NO<sub>x</sub>) under sunlight. ROG and NO<sub>x</sub> are primarily emitted from automobiles and industrial sources. O<sub>3</sub> is present in relatively high concentrations within portions of the Bay Area. Highest O<sub>3</sub> concentrations occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies.

Nitrogen Dioxide (NO<sub>2</sub>). NO<sub>2</sub>, a reddish-brown gas, irritates the lungs. It can cause breathing difficulties at high concentrations. Like O<sub>3</sub>, NO<sub>2</sub> is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO<sub>2</sub> are collectively referred to as nitrogen oxides (NO<sub>x</sub>) and are major contributors to O<sub>3</sub> formation. NO<sub>2</sub> also contributes to the formation of PM<sub>10</sub> (see discussion of PM<sub>10</sub> below). Levels of NO<sub>2</sub> in the Bay Area are relatively low.

Sulfur Oxides (SO<sub>2</sub>). Sulfur oxides, primarily SO<sub>2</sub>, are a product of high-sulfur fuel combustion. The main sources of SO<sub>2</sub> are coal and oil used in power stations, in industries, and for domestic heating. Industrial chemical manufacturing is another source of SO<sub>2</sub>. SO<sub>2</sub> is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. Due to the lack of sources, SO<sub>2</sub> is found at low concentrations in the North Bay region.

Suspended Particulate Matter (PM). Particulate matter pollution consists of very small liquid and solid particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industry and motor vehicles undergo chemical reactions in the atmosphere. Respirable particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>) represent fractions of particulate matter. PM<sub>10</sub> refers to particulate matter less than 10 microns in diameter, about one/seventh the thickness of a human hair. PM<sub>2.5</sub> refers to particulate matter that is 2.5 microns or less in diameter. Major sources of PM<sub>10</sub> include motor vehicles, wood burning stoves and fireplaces, dust from construction, landfills, and agriculture, wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. PM<sub>2.5</sub> results primarily from diesel fuel combustion (from motor vehicles, power generation, industrial facilities), residential fireplaces, and wood stoves. In addition, PM<sub>2.5</sub> is formed in the atmosphere from gases such as SO<sub>2</sub>, NO<sub>x</sub>, and volatile organic compounds. PM<sub>10</sub> and PM<sub>2.5</sub> pose a greater health risk than larger-size

particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM<sub>10</sub> and PM<sub>2.5</sub> can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas larger particles tend to collect in the upper portion of the respiratory system, PM<sub>2.5</sub> is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

### Toxic Air Contaminants (TAC)

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter and benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level. Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). Diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the California Air Resources Board (CARB), and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants program. California has adopted a comprehensive diesel risk reduction program. The US EPA has adopted low sulfur diesel fuel standards that will reduce diesel particulate matter substantially. These went into effect in June 2006.

In cooler weather, smoke from residential wood combustion can be a source of TACs. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind, the pollution can persist for many hours. This occurs in sheltered valleys during the winter. Wood smoke also contains a significant amount of PM<sub>10</sub> and PM<sub>2.5</sub>. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

CARB data indicate that the cancer health risk from air toxic contaminants in Moraga is less than 500 chances in one million, while the risk in urbanized areas of the Bay Area exceeds 1,000 chances per million. This risk is expected to decrease substantially in the future.

### Air Pollution Potential

The clear skies with relatively warm conditions that are typical in summer combine with localized air pollutant emissions to elevate O<sub>3</sub> levels. Air quality standards for O<sub>3</sub> traditionally are exceeded when relatively stagnant conditions occur for periods of several days during the warmer months of the year. Weak wind flow patterns combined

with strong inversions substantially reduce normal atmospheric mixing. Key components of ground-level O<sub>3</sub> formation are sunlight and heat; therefore, significant O<sub>3</sub> formation only occurs during the months from late spring through early fall. Air pollution potential in the Project area is not as high as other parts of the Bay Area because winds generally do not transport enough of the precursor pollutants into that area (highest concentrations occur at monitoring stations in the eastern and southern portions of the Bay Area that are usually downwind of the major urban areas)

## **Sensitive Receptors**

Sensitive receptors are people who are particularly susceptible to the adverse effects of air pollution. CARB has identified the following people who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. Both state and national ambient air quality standards were developed with the intent to protect sensitive receptors from the adverse impacts of air pollution.

## **Greenhouse Gases and Global Warming**

### ***Background and U.S. Greenhouse Gas Emissions***

The burning of fossil fuels, such as coal and oil, and destruction of forests increase the amount and concentrations of “greenhouse gases” in the atmosphere. These gases retain heat in the atmosphere and contribute to increases in average global atmospheric temperatures and climate change. Eleven of the last twelve years rank among the 12 warmest years on record (since 1850), with the warmest two years being 1998 and 2005. Other aspects of the climate are changing such as rainfall patterns, snow and ice cover, and sea levels.

If greenhouse gas emissions continue to increase, climate models predict that the average temperature at the Earth's surface could increase 3.2°F to 7.2°F (or higher) above 1990 levels by the year 2100.

### ***California Greenhouse Gas Emissions***

Table 4.G-2 lists 2004 California greenhouse gas emissions estimated (draft) by the CARB based on carbon dioxide equivalent emission rates. As shown, California carbon dioxide equivalent emissions were approximately 549 million tons in 2004.<sup>1</sup> As shown in the table, over 87 percent of greenhouse gas emissions from within California occur from energy production/consumption, with electricity generation comprising 20 percent (100 million metric tons) and road transportation comprising 33 percent (167 million metric tons). It is important to note that federal and state regulatory processes apply to both motor

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<sup>1</sup> One metric ton is the equivalent of 2,200 pounds and one U.S. ton (short ton) is 2,000 pounds, resulting in a conversion of 499.09 million metric tons to 549 million tons.

vehicle emissions and electrical generation facility emissions. Motor vehicle emission standards and electrical generation facility operations emissions are not subject to regulation by the Town of Moraga.

**Table 4.G-2**

California 2004 Greenhouse Gas Emissions Inventory

Category	CO2 Equivalent (million metric tons)	Percent Total (of gross)
Energy Total	437.11	87.58
<i>Energy - Electricity Generation</i>	100.095	20.06
<i>Energy - Road Transportation</i>	166.747	33.41
<i>Energy - All Other</i>	170.268	34.12
Industrial Processes and Product Use	27.65	5.54
Agriculture, Forestry and Other Land Use	27.45	5.50
Waste Total	6.88	1.38
<i>Waste - Solid Waste Disposal</i>	5.83	1.17
<i>Waste - Wastewater Treatment and Discharge</i>	1.05	0.21
Total (gross)	499.09	100.00
Sinks and Sequestrations	-2.14	0.43
Total (net)	496.95	

Source: California Air Resources Board, August 22, 2007  
(draft)

**Carbon Sequestration**

Carbon storage (sequestration) occurs in forests and soils primarily through the natural process of photosynthesis. Atmospheric carbon dioxide is taken up through leaves and becomes carbon in the woody biomass of trees and other vegetation. Approximately half of vegetation mass (biomass) is carbon. When vegetation dies and decays, some of this carbon makes its way into soils; however, carbon (in the form of carbon dioxide) can return to the atmosphere when agricultural tillage practices stir up soils or when biomass decays and/or burns. Forests and agricultural soils can both sequester and release carbon dioxide and the net effect is dependent upon site-specific circumstances.

The term “sinks” is used to refer to forests, croplands, and grazing lands, and their ability to sequester carbon. Agriculture and forestry activities can release CO<sub>2</sub> to the atmosphere. Therefore, a carbon sink occurs when carbon sequestration is greater than carbon releases over some time period. Carbon sequestration rates

vary by tree species, soil type, regional climate, topography and management practice.

Carbon can be sequestered in forests/woodlands over decades or even centuries, until mature ecosystems reach a stage of carbon saturation; however, as natural decay or other events such as fire or harvesting occur carbon is released back to the atmosphere as carbon dioxide. Carbon from forests can be stored in wood products like furniture and housing lumber for up to several decades. However, ultimately much of the carbon in wood products eventually decays and can be released back to the atmosphere as carbon dioxide. (US EPA, 2006)

In terms of its global warming impact, one unit of CO<sub>2</sub> released from a car's tailpipe has the same effect as one unit of CO<sub>2</sub> released from a burning forest. Likewise, CO<sub>2</sub> removed from the atmosphere through tree planting can have the same benefit as avoiding an equivalent amount of CO<sub>2</sub> released from a power plant. However, the climate benefits of sequestration practices can be partially or completely reversed because terrestrial carbon can be released back to the atmosphere through decay or disturbances. Trees that sequester carbon are subject to natural disturbances and harvests, which could suddenly or gradually release the carbon back to the atmosphere. And if carbon sequestration practices in agriculture, such as reduced tillage, are abandoned or interrupted, most or all of the accumulated carbon can be quickly released. Some sequestration practices, like tree planting and improved soil management, reach a point where additional carbon accumulation is no longer possible. For example, mature forests will not sequester additional carbon after the trees have fully grown. At this point, however, the mature trees or practices still need to be sustained to maintain the level of accumulated carbon. (US EPA, 2006)

### ***Project Area Electricity Supply and Greenhouse Gas Emissions***

Greenhouse gas emissions (and sequestration) inventories are not available specifically for Contra Costa County or for the project region. However, in consideration of the statewide emissions and percentages listed above, the most likely contributing factors for greenhouse gas emissions within the Project area are transportation activities (goods transportation and personal automobile use) and electricity consumption. Electricity is supplied to the Project area by PG&E.

As reported by PG&E (2007), the carbon dioxide emissions rate of PG&E-owned electric generation was 44 pounds per megawatt-hour (lbs/MWh), while the independently certified CO<sub>2</sub> emissions rate associated with the power sold by PG&E to its customers was 489 lbs/MWh. The national average carbon dioxide emissions rate for power generation was approximately 1,363 lbs/MWh and the California average CO<sub>2</sub> emissions rate was approximately 879 lbs/MWh, as shown in Table 4.G-3.

**Table 4.G-3**

Comparison of 2005 PG&E, California and U.S. Electricity Production Average  
Pounds of Carbon Dioxide Emissions per Megawatt Hour

PG&E Average	California Average	U.S. Average
489 lbs/MWh	879 lbs/MWh	1,363 lbs/MWh

Source: PG&E, 2007  
California and U.S. rates based on U.S. Environmental Protection Agency eGRID Version 2.1 (updated April 2007 and based on 2004 data).

### ***Project Site Greenhouse Gas Emissions***

The Town of Moraga is about 9.5 square miles in area. About 50% of the Town's land area is in residential use with open space the second-largest land use. Commercial uses cover about 2% of the town's land area, or about 110 acres. About 2,175 acres of the Town are undeveloped. Of that total, about 1,902 acres are planned to remain open space and the remainder to be developed for residential and commercial uses. Educational facilities are located on about 495 acres of the Town's land area.

Transportation, energy use and other activities associated with existing and planned residences, commercial and residential uses are anticipated to result in greenhouse gas emissions typical of suburban community activities. Vegetation cover on the Town's open space creates a continuous cycle of carbon dioxide uptake and release during the growth and decay of plant material. Plant communities in Moraga include non-native grassland, northern coastal scrub, Diablan sage scrub, northern mixed chaparral, live oak woodland, central coast live oak riparian woodland, central coast arroyo willow riparian forest, coastal and valley freshwater marsh, and freshwater seeps. It is anticipated that the cycle of carbon dioxide uptake and release is balanced with a limited, if any, net absorption of carbon dioxide.

### **Air Monitoring Data**

Table 4.G-4 shows the highest measured air pollutant levels at the Concord air monitoring station (the nearest monitoring station that tracks all criteria air contaminants) and the entire Bay Area monitoring network for the period 2002-2006. Data from all stations throughout the Bay Area indicate that the national ambient air quality standard for O<sub>3</sub> concentrations was exceeded on 0 to 3 days annually. The 8-hour national ambient air quality standard for O<sub>3</sub> was exceeded 0 to 7 days annually. The more stringent state O<sub>3</sub> standard was exceeded on 7 to 19 days annually. The state PM<sub>10</sub>

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standard was exceeded on 6 to 10 sampling days annually and the PM<sub>2.5</sub> national standard was exceeded on 0 to 7 days annually.

**Table 4.G-4****Highest Measured Air Pollutant Concentrations**

<b>Pollutant</b>	<b>Average Time</b>	<b>Measured Air Pollutant Levels</b>				
		<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Concord (closest ambient air quality monitoring station to Moraga)</b>						
Ozone (O <sub>3</sub> )	1-Hour	10 ppm	10 ppm	10 ppm	98 ppm	117 ppm
	8-Hour	9 ppm	9 ppm	8 ppm	80 ppm	8 ppm
Carbon Monoxide (CO)	1-Hour	3.5 ppm	3.2 ppm	2.7 ppm	2.2 ppm	1.7 ppm
	8-Hour	2.3 ppm	2 ppm	2.0 ppm	1.5 ppm	1.3 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1-Hour	6 ppm	6 ppm	7 ppm	55 ppm	47 ppm
	Annual	1.5 ppm	1.3 ppm	1.2 ppm	12 ppm	11 ppm
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	77 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	74 µg/m <sup>3</sup>	48.9 µg/m <sup>3</sup>	62.1 µg/m <sup>3</sup>
	Annual	13.3 µg/m <sup>3</sup>	9.7 µg/m <sup>3</sup>	10.7 µg/m <sup>3</sup>	9.0 µg/m <sup>3</sup>	9.3 µg/m <sup>3</sup>
Respirable Particulate Matter (PM <sub>10</sub> )	24-Hour	63 µg/m <sup>3</sup>	34 µg/m <sup>3</sup>	54 µg/m <sup>3</sup>	42 µg/m <sup>3</sup>	81 µg/m <sup>3</sup>
	Annual	20.9 µg/m <sup>3</sup>	16.4 µg/m <sup>3</sup>	18.6 µg/m <sup>3</sup>	16.4 µg/m <sup>3</sup>	18.5 µg/m <sup>3</sup>
<b>Bay Area (Basin Ambient Air Quality Summary)</b>						
Ozone (O <sub>3</sub> )	1-Hour	0.16 ppm	0.13 ppm	0.11 ppm	0.12 ppm	0.13 ppm
	8-Hour	0.11 ppm	0.10 ppm	0.08 ppm	0.09 ppm	0.11 ppm
Carbon Monoxide (CO)	8-Hour	4.5 ppm	4.0 ppm	3.4 ppm	n/a	n/a
	1-Hour	0.08 ppm	0.09 ppm	0.07 ppm	n/a	n/a
Nitrogen Dioxide (NO <sub>2</sub> )	Annual	0.014 ppm	0.021 ppm	0.019 ppm	n/a	n/a
	1-Hour	0.08 ppm	0.09 ppm	0.07 ppm	n/a	n/a
Fine Particulate Matter (PM <sub>2.5</sub> )	1-Hour	77 ug/m <sup>3</sup>	56 ug/m <sup>3</sup>	74 ug/m <sup>3</sup>	n/a	n/a
	Annual	14 ug/m <sup>3</sup>	11.7 ug/m <sup>3</sup>	11.6 ug/m <sup>3</sup>	n/a	n/a
Respirable Particulate Matter (PM <sub>10</sub> )	24-Hour	84 ug/m <sup>3</sup>	60 ug/m <sup>3</sup>	65 ug/m <sup>3</sup>	81 ug/m <sup>3</sup>	106 ug/m <sup>3</sup>
	Annual	25 ug/m <sup>3</sup>	25 ug/m <sup>3</sup>	26 ug/m <sup>3</sup>	24 ug/m <sup>3</sup>	35 ug/m <sup>3</sup>

Source: BAAQMD and California Air Resources Board  
2008

Note: ppm = parts per million  
n/a = data not available

In general, the air monitoring data show that ambient air quality has improved in the Bay Area over the last decade. This is due to ongoing reductions in emissions resulting from implementation of emissions control measures on mobile and stationary sources.

## **4.G-2 REGULATORY SETTING**

### **Federal**

The US EPA administers the FCAA and is responsible for establishing NAAQS as required under the FCAA. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California.

### **State of California**

States retain the right to adopt more stringent standards, however, and air quality in California is further governed by the CCAA. California ambient standards are at least as protective as national ambient standards and are often more stringent. CARB, part of the California Environmental Protection Agency (CalEPA), is responsible for meeting the state requirements of the federal CAA, administering the CCAA, establishing CAAQS, and monitoring ambient air quality throughout the state. The CCAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain CAAQS, which are more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

### **Bay Area Air Quality Management District (BAAQMD)**

In 1955, the California Legislature created the BAAQMD, which is primarily responsible for assuring that the national and state ambient air quality standards are attained and maintained in the Bay Area. BAAQMD adopts and enforces rules and regulations concerning air pollutant sources, permits and inspects stationary sources of air pollutants, responds to citizen complaints, monitors ambient air quality and meteorological conditions, awards grants to reduce motor vehicle emissions, and conducts public education campaigns. BAAQMD has developed thresholds of significance specifically for local plans. Local plans of cities must show consistency with regional plans and policies affecting air quality to claim a less than significant impact on air quality. For a local plan to be consistent with the regional air quality plan it must be consistent with the most recently adopted Clean Air Plan (CAP) (BAAQMD, 1996). According to

BAAQMD, all criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not have a significant air quality impact (BAAQMD, 1997). BAAQMD does not have authority to regulate emissions from motor vehicles.

## **Town of Moraga Goals, Objectives and Policies**

The Moraga 2002 General Plan has numerous goals, objectives and policies addressing air quality. The applicable goals, objectives and policies are listed below.

### **Goal OS4. Air Quality.** Preservation and maintenance of air quality.

Policy OS4.1 Development Design. Conserve air quality and minimize direct and indirect emissions of air contaminants through the design and construction of new development. For example, direct emissions may be reduced through energy conserving construction that minimizes space heating, while indirect emissions may be reduced through uses and development patterns that reduce motor vehicle trips generated by the project.

Policy OS4.2 Development Approval and Mitigation. Prohibit development projects which, separately or cumulatively with other projects, would cause air quality standards to be exceeded or would have significant adverse air quality effects through direct and/or indirect emissions. Such projects may only be approved if, after consulting with the

Bay Area Air Quality Management District (BAAQMD), the Town Council explicitly finds that the project incorporates feasible mitigation measures or that there are overriding reasons for approving the project.

Policy OS4.3 Development Setbacks. Provide setbacks along high intensity use roadways to reduce resident exposure to air pollutants.

Policy OS4.4 Landscaping to Reduce Air Quality Impacts. Encourage the use of vegetative buffers along roads to assist in pollutant dispersion.

Policy OS4.5 Alternate Transportation Modes. Encourage transportation modes that minimize motor vehicle use and the resulting contaminant emissions. Alternate modes to be encouraged include public transit, ride-sharing, combined motor vehicle trips to work and the use of bicycles and walking.

Policy OS4.6 New Transportation Technologies. Encourage use of new transportation technologies such as alternative fuel vehicles that may provide environmental benefits such as reduced air pollution, lower energy consumption, and less noise.

Policy OS4.7 Trip Reduction Programs. Encourage employers to foster employer-based transportation control measures such as ride-sharing, use of public transportation, bicycling and walking to work.

Policy OS4.8 Smoking in Public Areas. Discourage smoking in enclosed public places and work places.

Policy OS4.9 Public Information on Air Pollution. Encourage public education programs that demonstrate the benefits of reduced air pollution.

### Attainment Status for State and Federal Ambient Air Quality Standards

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area as a whole does not meet state or federal ambient air quality standards for ground level O<sub>3</sub> and state standards for fine particulate matter. For O<sub>3</sub>, the entire Bay Area is designated non-attainment at both the federal and state levels.

Under the FCAA, the US EPA has designated the region as moderate non-attainment for ground level O<sub>3</sub>. The US EPA recently revoked the 1-hour standard and replaced it with an 8-Hour standard. The US EPA classified the region as marginally non-attainment for the 8-hour O<sub>3</sub> standard, and required BAAQMD to adopt a plan that would bring it into attainment with that standard by 2007. Currently, attainment has not been achieved and the BAAQMD is updating the 2007 Bay Area Ozone Strategy. The Bay Area has met the CO standards for over a decade and is classified as attainment by the EPA. The EPA grades the region unclassified for all other air pollutants, which include PM<sub>10</sub> and PM<sub>2.5</sub>. This means that the area likely meets the standard.

At the state level, the region is considered serious non-attainment for ground level O<sub>3</sub> and non-attainment for PM<sub>10</sub>. California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the state O<sub>3</sub> standard. The area is considered attainment or unclassified for all other pollutants.

### Regional Air Quality Planning

The Project is located in the San Francisco Bay Area Air Basin, which is a state and federal “non-attainment” area for ozone and a state “non-attainment” area for particulate matter with less than a 10-micron diameter (PM<sub>10</sub>). The Bay Area Air Quality Management District (BAAQMD), in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), is updating the 2007 *Bay Area Ozone Strategy*. The *Bay Area Ozone Strategy* is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. Although the CCAA does not require the region to submit a plan for achieving the State PM<sub>10</sub> standard, the Ozone Strategy is expected to also reduce PM<sub>10</sub> emissions. The 2005 *Ozone Strategy* was first approved at the end of 2005. The *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* is the Bay Area’s plan for bringing the area into compliance with the FCAA. These plans contain mobile source controls, stationary source controls and transportation control measures (TCMs), and voluntary programs (such as *Spare the Air*) to be implemented in the region to attain the state and federal ozone standards within the Bay Area Air Basin. The plans are based on

population and employment projections provided by local governments, usually developed as part of the General Plan update process.

Some of these measures or programs rely on local governments for implementation. A key element in air quality planning is to make reasonably accurate projections of future human activities that are related to air pollutant emissions. Most important is vehicle activity. BAAQMD uses population projections made by ABAG and vehicle use trends made by the MTC to formulate future air pollutant emission inventories. The basis for these projections comes from cities and counties. In order to provide the best plan to reduce air pollution in the Bay Area, accurate projections from local governments are necessary. When General Plans are not consistent with these projections, they cumulatively reduce the effectiveness of air quality planning in the region. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality impacts. These guidelines were used in the EIR to establish levels of significance.

### Evaluation Criteria

Table 4.G-5 presents evaluation criteria and points of significance used for analysis of air quality impacts. The criteria are based on CEQA Guidelines.

**Table 4.G-5**

#### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.G-1. Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Project-related emissions	Exceedence of Federal, State, or local Air Quality Standard	CEQA Checklist III(b); EPA, CARB emission standards; Moraga General Plan Policy OS4.2
4.G-2. Will the Project conflict with or obstruct implementation of the applicable Clean Air Plan?	Consistency with air quality plan	Non-conformance with air quality plan	CEQA Checklist III(a); CAP; Town Policies
4.G-3. Is the Project consistent with the Clean Air Plan population and Vehicle Miles Traveled (VMT) assumptions and Transportation Control Plans (TCMs)?	Project related population growth and VMT increase.	Non-conformance with CAP and VMT; Exceedence of population growth projections in CAP and if VMT growth is greater than population growth rate	CEQA Checklist III(a); BAAQMD CEQA Guidelines

**Table 4.G-5**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.G-4. Will the Project result in a substantial net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Project-related emissions for each criteria pollutant in lbs./day and tons/year	More than 80 lbs./day or 15 tons/year increase in emissions of an ozone precursor or PM <sub>10</sub>	CEQA Checklist III(c); BAAQMD CEQA Guidelines; Moraga General Plan Policy OS4.2
4.G-5. Will the Project result in a significant impact to local air quality?	CO concentration at closest sensitive receptor	CO concentrations above the most stringent ambient standard for carbon monoxide (20 ppm for the one-hour averaging period, 9.0 ppm for the eight-hour averaging period)	CEQA Checklist III(d); BAAQMD CEQA Guidelines; Moraga General Plan Policies 4.2-4.3
4.G-6. Does the Project provide buffer zones around existing and proposed land uses that emit odors and/or toxic air contaminants?	Buffer zone sizes	Lack of adequate buffer zones to avoid odor/toxics impacts	CEQA Checklist III(d-e); BAAQMD CEQA Guidelines
4.G-7. Will the project result in substantial greenhouse gas emissions and/or substantially contribute to global warming?	Estimated GHG emissions and project elements constituting feasible GHG reduction strategies.	Cumulatively considerable net increase in CO <sub>2</sub> and failure to apply feasible GHG reduction strategies.	AB 32 (Global Warming Solutions Act)

**Methodology**

Estimates of construction and operational/long-term emissions of the Project traffic were made using a computer modeling software program called URBEMIS-2007. (Version 9.2.2 is the most current version at the time of preparation of this Draft EIR and was used for the analysis presented herein.) URBEMIS-2007 is a program that estimates the emissions that result from various land use development projects in California. Land use projects can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial parks. URBEMIS-2007 contains default values for much of the information

needed to calculate emissions. However, project-specific, user-supplied information can be used when it is available. Impacts discussed in this chapter include estimated emissions based on URBEMIS-2007 calculations and URBEMIS-2007 modeling data is provided in Appendix E.

## 4.G-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.G-6 presents potential air quality impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives.

**Table 4.G-6**

### Air Quality Impacts – All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.G-1. Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Exceedence of Federal, State, or local Air Quality Standard	C, P	Proposed Project ⊖ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.G-2. Will the Project conflict with or obstruct implementation of the applicable Clean Air Plan?	Non-conformance with air quality plan	C, P	Proposed Project ○ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.G-3. Is the Project consistent with the Clean Air Plan population and Vehicle Miles Traveled (VMT) assumptions and Transportation Control Plans (TCMs)?	Non-conformance with CAP and VMT; Exceedence of population growth projections in CAP and if VMT growth is greater than population growth rate	P	Proposed Project ○ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

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<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact<sup>1</sup></b>	<b>Level of<sup>2</sup> Significance</b>
4.G-4. Will the Project result in a substantial net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	More than 80 lbs./day or 15 tons/year increase in emissions of an ozone precursor or PM <sub>10</sub>	C, P	Proposed Project ● Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●
4.G-5. Will the Project result in a significant impact to local air quality?	CO concentrations above the most stringent ambient standard for carbon monoxide (20 ppm for the one-hour averaging period, 9.0 ppm for the eight-hour averaging period)	C, P	Proposed Project ● Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●
4.G-6. Does the Project provide buffer zones around existing and proposed land uses that emit odors and/or toxic air contaminants?	Lack of adequate buffer zones to avoid odor/toxics impacts	C, P	Proposed Project ○ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.G-7. Will the project result in substantial greenhouse gas emissions and/or substantially contribute to global warming?	Estimated GHG emissions and project elements constituting feasible GHG reduction strategies.	C, P	Proposed Project ● Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●

Source: HBA 2008

Notes: 1. Type of Impact:

C Construction

P Permanent

2. Level of Significance:

● Significant impact before and after mitigation

○ Significant impact before mitigation; less than significant impact after mitigation

 ○ Less than significant impact; no mitigation proposed  
== No impact

**Impact:** **4.G-1. Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

*Significant Impact; Proposed Project and All Action Alternatives*

Construction activities, mostly grading and paving, for individual projects would generate air pollutant emissions. The most substantial air pollutant would be dust, of which PM<sub>10</sub> is a component. Wind erosion and disturbance to exposed areas would also be sources of dust emissions. If uncontrolled, these emissions could lead to both health and nuisance impacts to new and existing residences. If residential uses are constructed prior to the commercial uses, emissions from construction activities could result in significant impacts to sensitive receptors.

The BAAQMD has identified reasonable and feasible dust control measures that are required to be implemented. These mitigation measures prevent visible dust clouds from spreading beyond the construction site and affecting nearby residences.

Construction equipment emits ozone precursor pollutants, mainly NO<sub>x</sub>, and diesel particulate matter. Diesel exhaust, a known toxic air contaminant, from construction equipment could expose existing and future residents to substantial levels of toxic air contaminants for short periods of time. Although concentrations of diesel particulate matter would likely be too low to result in significant exposures, control measures to reduce levels should be implemented during construction. In addition, asphalt coatings, which can emit volatile organic compounds, which may contain toxic air contaminants, should be applied in accordance with BAAQMD regulations and guidelines.

**Mitigation:** **4.G-1. Implement measures to reduce dust generation and diesel exhaust during construction periods.**

Each Project sponsor is responsible for ensuring that the contractor reduces particulate, ROG, NO<sub>x</sub>, and CO emissions by complying with the air pollution control strategies developed by the BAAQMD. Each Project sponsor and contractor shall develop emission control strategies that implement the following control measures based on the BAAQMD guidelines:

#### Dust Control Measures

For all construction sites:

- Cover all trucks hauling construction and demolition debris from the Site.
- Water on a continuous as-needed basis all earth surfaces during clearing, grading, earthmoving, and other Site preparation activities.

- Use watering to control dust generation during demolition of structures or break-up of pavement.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved parking areas and staging areas.
- Sweep daily (with water sweepers) all paved areas and staging areas.
- Provide daily clean up of mud and dirt carried onto paved streets from the Site.
- Renovation, demolition activities, removal or disturbance of any materials that contain asbestos, lead paint or other hazardous pollutants will be conducted in accordance with BAAQMD rules and regulations.
- Properly maintain all construction equipment.

For construction sites near sensitive receptors (or if residential development occurs prior to commercial development):

- Install wheel washers for all existing trucks, or wash off the tires or tracks of trucks and equipment leaving the Site.
- Suspend dust-producing activities during periods when instantaneous gusts exceed 25 mph when dust control measures are unable to avoid visible dust plumes.
- Limit the area subject to excavation, grading and other construction or demolition activity at any one time.

For sites greater than four acres:

- Apply soil stabilizers to previously graded portions of the site inactive for more than ten days or cover or seed these areas.
- Water or cover stockpiles of debris, soil, sand, or other materials that can be blown by the wind.
- Limit traffic speeds on unpaved roads to 15 mph.
- Replant vegetation in disturbed areas as quickly as possible.

#### Construction Exhaust Mitigation Measures

The potential air quality impacts from toxic air containment emissions from construction equipment and operations will be reduced with compliance with the Bay Area Air Quality Management District air pollution control strategies. Construction firms shall be required to post signs of possible health risk during construction. The developer is responsible for compliance with the Bay Area AQMD rule regarding cutback and emulsified asphalt paving materials. In addition, the construction contractors will implement a plan to use newer construction equipment, manufactured during or after 1996, that meets the NO<sub>x</sub>

emissions standard of 6.9 grams per brake-horsepower hour for work conducted within 200 feet of residences.

**After****Mitigation:** *Less than Significant; Proposed Project and All Alternatives*

The control measures listed above are consistent with those prescribed by the BAAQMD. Additional control measures are included that ensure the impact is reduced to a less-than-significant level.

**Impact:** **4.G-2. Will the Project conflict with or obstruct implementation of the applicable Clean Air Plan?****Analysis:** *No Impact; Alternative 1 (No Project)*

*Less Than Significant Impact; Proposed Project and All Action Alternatives*

Consistency of the Moraga Center Specific Plan is assessed by the following tests:

- The Project incorporates measures that are consistent with TCMs contained in the 2005 Bay Area Ozone Strategy that are to be implemented by projects or local governments.
- The Project includes adequate buffers to avoid impacts of air toxic contaminants and odors to sensitive receptors. These buffers include separating potential sources of air contaminants or odors from residential land uses in accordance with BAAQMD rules and regulations.
- The population and vehicle use projections should not exceed those assumed when developing the 2005 Bay Area Ozone Strategy (see the discussion of the impact of this test in Section 5.5 - Cumulative Impacts).

TCMs are included in clean air planning efforts. The latest adopted TCMs, for which local governments are considered as implementing agencies, are listed by the BAAQMD in their CEQA Guidelines. The Moraga Center Specific Plan cannot individually implement the listed measures for each project, but the plan's final development plan and the Town's General Plan does include all those measures that are consistent with the town's responsibility.

Sources of toxic air contaminants are not located near the Project and are not expected to result in significant health risks for new residences. The closest existing large sources of air pollutant emissions are Interstate Highways 580 and 680, and California State Highways 13 and 24; the closest highway is over 3 miles from the project area.

There are no existing major sources of odors that would affect proposed residential areas of the Site. Odors are required by the BAAQMD to remain within the property boundary.

There are no existing sources of odors in or near the project area. In the event that odor complaints are received by the BAAQMD from outside sources, the agency will investigate and require odor abatement, if necessary under the provisions of BAAQMD Regulation 7, Odorous Substances.

**Mitigation:** No mitigation is required.

**Impact:** **4.G-3. Is the Project consistent with the Clean Air Plan population and Vehicle Miles Traveled (VMT) assumptions and Transportation Control Plans (TCMs)?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

*Less Than Significant Impact; Proposed Project and All Action Alternatives*

Table 4.G-7 lists Town of Moraga General Plan policies that constitute implementation of the Clean Air Plan Transportation Control Measures (TCMs). For each TCM a description is provided and a listing of relevant General Plan policies or programs is given.

**Table 4.G-7**

**Implementation of Clean Air Plan  
Transportation Control Measures in General Plan**

TCM	Description	Relevant General Plan Policies/Programs
1. Expand Employee Assistance Program	Provide assistance to regional and local ridesharing organizations.	Policy OS4.7 Encourage employers to foster employer-based transportation control measures such as ride-sharing, use of public transportation, bicycling and walking to work. Policy OS4.9 Encourage public education programs that demonstrate the benefits of reduced air pollution.
9. Improve Bicycle Access and Facilities	Establish and maintain bicycle advisory committees in all nine Bay Area Counties Develop comprehensive bicycle plans. Encourage employers and developers to provide bicycle	Policy C1.1 Apply standard engineering principles in the design, construction and maintenance of all roadways to make them safer for all users, including bicyclists, pedestrians and equestrians. Policy C4.1 Provide a safe, continuous and connected system of pedestrian pathways through the Town, including sidewalks, paths, trails and appropriate crosswalks along all principal streets, to link residential neighborhoods, commercial areas, community facilities such as schools and parks, and other important destinations. Link this network as appropriate with

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TCM	Description	Relevant General Plan Policies/Programs
	access and facilities. Improve and expand bicycle lane system.	<p>the regional trails system.</p> <p>Policy C4.2 Develop a complete bicycle system with direct linkages between residential and commercial areas, community facilities, commuter corridors and transit hubs.</p>
15. Local Clean Air Plans, Policies and Programs	<p>Incorporate air quality beneficial policies and programs into local planning and development activities, with a particular focus on subdivision, zoning and site design measures that reduce the number and length of single-occupant automobile trips.</p>	<p>Policy OS4.1 Conserve air quality and minimize direct and indirect emissions of air contaminants through the design and construction of new development. For example, direct emissions may be reduced through energy conserving construction that minimizes space heating, while indirect emissions may be reduced through uses and development patterns that reduce motor vehicle trips generated by the project.</p> <p>Policy OS4.2 Prohibit development projects which, separately or cumulatively with other projects, would cause air quality standards to be exceeded or would have significant adverse air quality effects through direct and/or indirect emissions. Such projects may only be approved if, after consulting with the Bay Area Air Quality Management District (BAAQMD), the Town Council explicitly finds that the project incorporates feasible mitigation measures or that there are overriding reasons for approving the project.</p> <p>Policy OS4.5 Encourage transportation modes that minimize motor vehicle use and the resulting contaminant emissions. Alternate modes to be encouraged include public transit, ride-sharing, combined motor vehicle trips to work and the use of bicycles and walking.</p> <p>Policy C4.3 Encourage the use of transit to and from the Lamorinda BART stations by providing efficient, comfortable, frequent and reliable bus service roadways that are properly designed to accommodate bus maneuvering, stopping and parking; adequate, free, convenient all-day parking facilities at major transit stops in the Town (one at Moraga Center and one at Rheem Park); comfortable, safe and attractive amenities at bus stops.</p> <p>Policy C4.4 Encourage development patterns and other strategies that may help reduce traffic trips, especially during the morning and afternoon peak hours. For example:</p> <p>Encourage home-based occupations and telecommuting</p> <p>Encourage mixed use, small office, and live-work developments in centrally located areas of the Town (i.e., in the Specific Plan areas)</p> <p>Encourage higher density housing near the Town's major bus stops</p> <p>Encourage young people to bike or walk to school by providing a safe Town-wide system of pedestrian and bicycle pathways</p> <p>Encourage carpooling.</p>

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TCM	Description	Relevant General Plan Policies/Programs
17. Conduct Demonstration Projects	Promote demonstration projects to develop new strategies to reduce motor vehicle emissions. Projects include low emission vehicle fleets and LEV refueling infrastructure.	Policy OS4.6 Encourage use of new transportation technologies such as alternative fuel vehicles that may provide environmental benefits such as reduced air pollution, lower energy consumption, and less noise.
19. Pedestrian Travel	<p>Review/revise general/specific plan policies to promote development patterns that encourage walking and circulation policies that emphasize pedestrian travel and modify zoning ordinances to include pedestrian-friendly design standards/</p> <p>Include pedestrian improvements in capital improvements programs.</p> <p>Designate a staff person as a Pedestrian Program Manager.</p>	<p>Policy C4.1 Provide a safe, continuous and connected system of pedestrian pathways through the Town, including sidewalks, paths, trails and appropriate crosswalks along all principal streets, to link residential neighborhoods, commercial areas, community facilities such as schools and parks, and other important destinations. Link this network as appropriate with the regional trails system.</p> <p>Policy C4.4 Encourage development patterns and other strategies that may help reduce traffic trips, especially during the morning and afternoon peak hours. For example:</p> <p>Encourage mixed use, small office, and live-work developments in centrally located areas of the Town (i.e., in the Specific Plan areas)</p> <p>Encourage young people to bike or walk to school by providing a safe Town-wide system of pedestrian and bicycle pathways</p>
20. Promote Traffic Calming Measures	<p>Include traffic calming strategies in the transportation and land use elements of general and specific plans.</p> <p>Include traffic calming strategies in capital improvement programs.</p>	<p>Policy C1.1 Apply standard engineering principles in the design, construction and maintenance of all roadways to make them safer for all users, including bicyclists, pedestrians and equestrians.</p> <p>Policy C1.5 Design new areas of development so that residential areas are properly buffered from collector streets, with adequate distance, landscaping or other buffer to protect residences from adverse impacts. Also, direct traffic from major new residential developments so that it does not adversely impact existing neighborhoods.</p>

The TCMs listed are those that identify cities as an implementing agency. Cities are not the only implementing agencies for these TCMs; other agencies include counties, the BAAQMD, the Metropolitan Transportation Commission, Congestion Management Agencies and school districts. The proposed Moraga Center Specific Plan demonstrates reasonable efforts to

implement the TCMs in the Clean Air Plan. The project meets both criteria of consistency with the regional air quality plan.

**Mitigation:** No mitigation is required.

**Impact:** **4.G-4. Will the Project result in a substantial net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

**Analysis:** *No Impact; Alternative I (No Project)*

*Significant Impact; Proposed Project and All Action Alternatives*

The region currently exceeds state standards for O<sub>3</sub> and PM<sub>10</sub>. Ozone precursor pollutants (i.e., reactive organic gases [ROG] and nitrogen oxides [NO<sub>x</sub>]) and PM<sub>10</sub> are considered pollutants that affect the entire region. Direct and indirect emissions of O<sub>3</sub> precursor pollutants from the projects built out in the Specific Plan area could contribute to O<sub>3</sub> formation at downwind areas that experience unhealthy O<sub>3</sub> levels. Emissions of PM<sub>10</sub> or pollutants that lead to secondary formation of PM<sub>10</sub> could affect both local air quality and air quality in downwind areas.

Emissions of air pollutants that affect regional air quality associated with development of the Specific Plan were predicted using the URBEMIS2007 Version 9.2.4 model. The model combines proposed land use development scenarios with vehicle emissions factors developed by the California Air Resources Board's EMFAC2007 motor vehicle emissions model. Indirect emissions include emissions from Project generated traffic and area sources such as natural gas combustion for space and water heating, landscape equipment, and consumer products. The model also predicts emissions from residential wood burning devices.

Buildout emissions were calculated for the summer season, when ozone levels are highest. Emissions of PM<sub>10</sub> from mobile sources are not affected substantially from season to season. Emissions of PM<sub>10</sub> from stationary sources are higher in the winter season than in summer due to the use of wood-burning devices in residential units.

Results of the URBEMIS2007 modeling are summarized in Tables 4.G-8 to 4.G-11. The calculations show that the thresholds of significance for one or more criteria air contaminants (ROG, NO<sub>x</sub>, CO or PM<sub>10</sub>) are exceeded in each of the action alternatives. Thus, the impact to air quality is determined to be significant.

**Table 4.G-8**

Daily Emissions Associated with Proposed Project

Condition/Source	Reactive Organic Compounds (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Respirable Particulates (PM <sub>10</sub> )
Plan – Area (Stationary) Sources	56.6	10.6	33.0	0.1
Plan – Traffic (Mobile) Sources	78.9	77.7	804.25	107.7
Total Daily Emissions	135.48	88.3	837.1	102.67
<i>BAAQMD Thresholds</i>	<i>80 pounds</i>	<i>80 pounds</i>	<i>550 pounds for stationary sources</i>	<i>80 pounds</i>
<i>Significant (Y or N)</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>

\* Includes both Project-specific measures and overall improvements to motor vehicle fleet.

**Table 4.G-9**

Daily Emissions Associated with 339-Unit (General Plan) Alternative

Condition/Source	Reactive Organic Compounds (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Respirable Particulates (PM <sub>10</sub> )
Plan – Area (Stationary) Sources	24.4	5.0	22.1	0.1
Plan – Traffic (Mobile) Sources	44.8	53.0	550.8	73.2
Total Daily Emissions	69.2	57.0	572.9	73.2
<i>BAAQMD Thresholds</i>	<i>80 pounds</i>	<i>80 pounds</i>	<i>550 pounds for stationary sources</i>	<i>80 pounds</i>
<i>Significant (Y or N)</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>

\* Includes both Project-specific measures and overall improvements to motor vehicle fleet.

**Table 4.G-10**

Daily Emissions Associated with Alternative 3 – 400 Units

Condition/Source	Reactive Organic Compounds (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Respirable Particulates (PM <sub>10</sub> )
Plan – Area (Stationary) Sources	36.8	7.0	25.6	0.1
Plan – Traffic (Mobile) Sources	61.8	70.8	729.3	97.6
Total Daily Emissions	98.6	77.7	755.0	97.7
BAAQMD Thresholds	<i>80 pounds</i>	<i>80 pounds</i>	<i>550 pounds for stationary sources</i>	<i>80 pounds</i>
Significant (Y or N)	Y	N	Y	Y

\* Includes both Project-specific measures and overall improvements to motor vehicle fleet.

**Table 4.G-11**

Daily Emissions Associated with Alternative 4 – 560 Units

Condition/Source	Reactive Organic Compounds (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Respirable Particulates (PM <sub>10</sub> )
Plan – Area (Stationary) Sources	43.7	8.6	30.8	0.1
Plan – Traffic (Mobile) Sources	78.1	90.7	931.0	124.0
Total Daily Emissions	121.8	99.2	961.8	125.1
BAAQMD Thresholds	<i>80 pounds</i>	<i>80 pounds</i>	<i>550 pounds for stationary sources</i>	<i>80 pounds</i>
Significant (Y or N)	Y	Y	Y	Y

\* Includes both Project-specific measures and overall improvements to motor vehicle fleet.

**Mitigation: 4.G-4. Implement Measures to reduce energy consumption from mobile, stationary and area sources.**

The following measures are designed to reduce energy consumption and lower air pollutant emission rates from travel, heating and cooling, appliances and lighting. These measures also encourage alternative fuel sources, on-site energy production and reuse of resources. These measures would be in addition to, and supplement, the required TCMs described under Impact 4.G-3 above.

- Implement design measures to reduce vehicle trip trips and encourage other modes of travel, such as: 1) including high density residential,

mixed, or retail/commercial uses shall be within 1/4 mile of activity centers; 2) providing Class I or Class II bike lanes or a comparable bikeway connection to that existing facility (residential, commercial, mixed); 3) providing for pedestrian facilities and improvements such as sidewalks and trails (e.g., 5-foot) (residential, commercial, mixed); providing parking lot designs with clearly marked and shaded pedestrian pathways towards building entrances (commercial).

- b. Include electric vehicle charging facilities within all new homes.
- c. Provide the minimal amount of car parking required and increase the amount of bike storage and parking areas at both residential and non-residential projects.
- d. Include transportation impact fees to fund public transit service.
- e. Orient project locations towards supporting existing regional centers where various types of public transportation needs can be meet.
- f. Only wood-burning devices that comply with US EPA regulations shall be allowed within the project area.

**After****Mitigation:** *Significant; Proposed Project and All Action Alternatives*

Implementation of the above mitigation measures will reduce the emission of all criteria air contaminants along with Greenhouse Gases (principally CO<sub>2</sub> from fossil fuel combustion), possibly to a level of less than significant. However, the actual amount of reduction cannot be estimated at this time, because individual projects to be constructed in accordance with the Specific Plan have not yet been proposed. Estimating project-level emissions at this time would be unduly speculative and thus achievement of sufficient emissions reduction to achieve a less than significant impact cannot be fully demonstrated. Therefore, the impact finding would remain significant after mitigation.

**Impact:** **4.G-5. Will the Project result in a significant impact to local air quality?****Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative would not result in any change to current transportation systems. Therefore, no impacts to local CO air quality would result.

**Analysis:** *Significant Impact; Proposed Project and All Action Alternatives*

Impacts to local air quality are determined by estimating CO concentrations above the most stringent ambient standard for carbon monoxide (20 ppm for the one-hour averaging period, 9.0 ppm for the

eight-hour averaging period). Such concentrations normally result at street intersections operating at a level-of-service (LOS) of worse than C. If intersections operate at a LOS of C or better, then it is assumed that local exceedances of the threshold for CO concentrations (CO “hotspots”) will not occur.

According to the analysis presented in Chapter 4.F Transportation, Circulation and Parking (Table 4.F-12), the Project and all the Action Alternatives would result in worsening of LOS at a number of intersections either from a current LOS C to LOS D or below, or from a current level of LOS D or below to LOS D, E, or F. These intersections include:

- Camino Pablo/Brookwood Road (intersection #5)
- Glorietta Blvd/Moraga Way (intersection #9)
- Ivy Drive/Moraga Way (intersection #10)
- Deer Hill Drive/Oak Hill Road (intersection #13)
- Moraga Road/Moraga Blvd (intersection #25)
- Moraga Road/Brook Street (intersection #26)
- Glenside Drive/Reliez Station Road (intersection #39)
- Glenside Drive/Burton Drive (intersection #40)
- Pleasant Hill Road/Olympic Blvd (intersection #44)
- Moraga Road/Corliss Drive (intersection #49)

Based upon the reduction in Level of Service at intersections currently operating at poor conditions, the impacts of the Project and all the Action Alternatives to local air quality are considered to be significant.

**Mitigation:** **4.G-5. Implement Transportation Mitigation Measures 4.F-3, 4.F-4, 4.F-5, and 4.F-11 to Reduce Traffic Volumes and Vehicle Delay.**

Mitigation measures proposed for reducing traffic volumes and improving vehicle delay will also reduce local air quality impacts. Therefore, it is recommended that transportation mitigation measures 4.F-3, 4.F-4, 4.F-5, 4.F-11 be implemented to improve traffic flows at intersections and along roadways to reduce impacts to local air quality. The transportation mitigation measures identified to reduce traffic volumes and vehicle delay include:

4.F-3: Install a traffic signal with the current lane configuration at the Corliss Drive/Moraga Way intersection.

4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program.

4.F-5: Install traffic signals at the following Lafayette intersections: Deer Hill Drive/Oak Hill Road (with the current lane configuration), Glenside Drive/Reliez Station Road (widen Glenside Drive for a left turn pocket), Glenside Drive/Burton Drive (widen Glenside Drive for a left turn pocket), and Pleasant Hill Road/Olympic Boulevard (with the current lane configuration).

4.F-11: Provide Adequate Parking Supplies.

**After**

**Mitigation:** *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

Implementation of the recommended transportation mitigation measures will lessen local air quality impacts, but it cannot be demonstrated that the impacts would be reduced to a level of less than significant. Therefore, it is assumed that the level of impact after mitigation would remain significant and unavoidable.

**Impact:** **4.G-6. Does the Project provide buffer zones around existing and proposed land uses that emit odors and/or toxic air contaminants?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

*Less than Significant; Proposed Project and All Action Alternatives.*

The Town of Moraga does not have land uses that emit odors and/or toxic air contaminants. Moraga consists of residential, light commercial and institutional land uses. The Moraga 2002 General Plan does not propose any changes to these land uses that would result in the potential for new odors and/or toxic air contaminants. According to BAAQMD significance criteria, the General Plan should include buffers, where necessary, to ensure that sensitive land uses are not located adjacent to odorous and/or toxic emissions. However, based upon the lack of proposed land uses (i.e., heavy commercial or industrial) that could emit such odors or toxic emissions, buffer zones are not necessary in the Moraga 2002 General Plan. Therefore, this impact is considered to be less than significant.

**Mitigation:** No mitigation is required.

**Impact:** **4.G-7. Will the project result in substantial greenhouse gas emissions and/or substantially contribute to global warming?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

*Significant; Proposed Project and All Action Alternatives*

The Project will result in short-term GHG emissions during Project construction from construction vehicle/equipment emissions and as a result of CO<sub>2</sub> released from vegetation cleared during site preparation.

The Project will result in permanent/on-going direct and indirect greenhouse gas emissions associated with motor vehicle operation, energy consumption and other activities within the Project.

The URBEMIS-2007 program was utilized to estimate operational emissions of CO<sub>2</sub> from a variety of sources associated with the Project. Transportation is the largest source of GHG emissions from the Project, with other sources including on-site combustion of various fuels associated with facility maintenance, landscaping, natural gas consumption for heating and cooking, and other activities within the Project. The resulting estimated emissions of GHG associated with the project at buildout range from 8,686 tons per year (Alternative 2 General Plan) to 14,828 tons per year (Alternative 4 – 560 Units).

In addition, GHG emissions will occur as a result of electricity consumption within the Project. These emissions will occur at the source of production and could occur hundreds of miles distant from the Project; nonetheless, these emissions will contribute to total worldwide GHG emissions.

In 2004 statewide GHG emissions are estimated at approximately 549 million tons, and 2005 U.S. GHG emissions are estimated at approximately 7.92 billion tons.

There are no established legally binding or advisory federal, state, county or air district thresholds of significance to which the above emissions can be compared. For the purposes of this Draft EIR, the Town has taken the following approach in determining the significance of the Project's greenhouse gas emissions. The issue is really a matter of cumulative impacts, as the Project's greenhouse gas emissions, by themselves, are so tiny as a percentage of worldwide GHG emissions as to create no discernable effects of the kind occurring cumulatively (rising temperatures, changed weather, etc.). The question therefore becomes whether the project's incremental contribution to a significant worldwide cumulative impact is itself "cumulatively considerable."

The Town is aware that "the 'one [additional] molecule rule' is not the law" (*Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 120). As such, the Town declines to set "no net increase" as a CEQA threshold that must be met to avoid a finding of significant effect. Still, the Town is aware that "the greater the existing environmental problems are, the lower the threshold should be for treating a Project's contribution to cumulative impacts as significant." (*Communities for a Better Environment*, *supra*, 103 Cal.App.4th at p. 120.) Thus, the Town is not prepared to permit any appreciable net GHG emission increase without considering such an impact to be cumulatively considerable.

Another factor to consider is how well a proposed project accords with statewide policy set forth in AB 32, which envisions a changing regulatory

climate in California over the next 12 years leading to dramatic reductions in overall Statewide GHG emissions. AB 32 sets forth the state's goals (A) of achieving by 2020 a statewide greenhouse gas emissions limit no higher than total 1990 statewide greenhouse gas emissions, and (B) of continuing after 2020 to achieve even further reductions in greenhouse gas emissions. The Act requires the Air Resources Board to adopt lists, plans, and regulations to advance these goals.

In enacting AB 32 the Legislature did not intend to so burden entrepreneurs acting within the State economy as to render their projects financially infeasible or uncompetitive. The State's heavy reliance on fossil fuels for transportation and energy sources is the primary problem to be addressed in achieving the Act's objectives. Land use decisions can exacerbate climate change by contributing to the needless consumption of electricity and GHG-emitting vehicle fuels; but, even so, good planning can only achieve limited results as long as the energy and transportation sectors remain highly dependent on fossil fuels.

Notably, the Proposed Project includes several components that are intended to promote energy efficiency (e.g., high density residential housing, trail networks, design guidelines that require landscaping, etc.). In addition, this Draft EIR identifies several mitigation measures that will serve to further define the project mitigation elements and to require additional mitigation, much of which will increase transportation efficiency and alternative transportation options both within the project and to connect the project with other areas, and to further increase and improve energy efficiency.

Although these mitigation measures have been developed to address other project impacts, many of the measures defined in this Draft EIR will provide for improved energy conservation, fuel-consumption reduction, traffic congestion reduction, and other factors that will directly reduce the project's contribution to greenhouse gas emissions.

Based on the Town's approach to assessing the significance of the project's GHG emissions, implementation of measures to improve air quality will substantially lessen, but not avoid, project-specific GHG emissions and such emissions would be significant and unavoidable.

Finally, this conclusion is very conservative, but the conclusion reflects the severity of the climate change problem and is consistent with what the Town perceives to be the legislative intent behind AB 32. Consistent with long-standing CEQA methodologies developed for traditional air pollutants, the emission calculation methodology used for this EIR treated project emissions as if they were all "new" emissions, and does not correct for the fact that many of the future residents generating GHG emissions associated with the project could simply be moving from an existing location to the project site. Therefore, even recognizing that new structures generate new emissions from construction activities and

monthly power consumption, the project's net contribution of GHG emissions to global climate change would likely be much less than the estimates set forth in this EIR. The project will not directly induce increased birth rates leading to a net increase in GHG-emitting human beings. Rather, the project will simply provide existing human beings additional places to live and work. For similar reasons, the project's proportion of global and statewide emissions would be less than described above.

Another factor to keep in mind is the reality that land use decisions can have only limited effects on reducing GHG emissions. Other than insisting on aggressive energy conservation and taking steps to design and orient land uses to reduce overall vehicle miles traveled, a city or county has few additional options for making additional GHG emission reductions.

For all of these reasons, the Town has taken a conservative approach and in spite of the numerous mitigation measures proposed, has determined that the project will create a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change.

**Mitigation:** **4.G-7 Implement the air pollution reduction measures identified in Table 4.G-7 and Mitigation Measure 4.G-4 above.**

**After**

**Mitigation:** *Significant and Unavoidable; Proposed Project and All Action Alternatives*

## **4.G-4 CUMULATIVE IMPACTS**

Cumulative impacts may occur as a result of project-specific impacts when considered in conjunction with similar impacts from other past, present or reasonably foreseeable projects. The potential for cumulative air quality impacts of the project exists as a result of project-related air pollutant emissions that could affect air quality, human health and/or global warming in a manner that increases when considered in conjunction with air pollutant emissions from other projects.

The project impacts identified in Chapter 4 have each been considered in terms of their potential to contribute to regional air quality problems and this analysis concludes that two of these impacts have the potential to result in cumulatively considerable impacts.

Impact 4.G-4 identifies that Project-related vehicle trips and on-site emissions will result in ozone precursor and PM<sub>10</sub> emissions in excess of project-specific evaluation thresholds and will contribute to regional air quality impacts. It is important to note that project-specific significance thresholds have been developed in consideration of regional air quality and, therefore, reflect cumulative impacts to the extent that past and present projects have and are contributing to degraded air quality in the study area. Mitigation Measure 4.G-4 will reduce project-related ROG and NO<sub>x</sub> (ozone precursor) ROG, PM<sub>10</sub>

emissions. However, Mitigation Measure 4.G-4 will not reduce project-related ROG, NO<sub>x</sub>, and e PM<sub>10</sub> missions to below the project significance threshold.

Contra Costa County is classified as a non-attainment area for the state and federal ozone standards. In order to improve air quality and attain the health-based standards, reductions in emissions are necessary within the County and air basin. The growth and combined population, vehicle usage, and business activity to which the project will cumulatively contribute, will either delay attainment of the standards or require the adoption of additional controls on existing and future air pollution sources to offset project-related emission increases.

The project is part of a pattern of urbanization of the East Bay area. Developments such as those proposed in Moraga Center Specific Plan are located near major employment centers but remain reliant on automobiles for required daily long-distance commuting. This project, in combination with other past, present and reasonably foreseeable development projects within Contra Costa County and neighboring East Bay areas, will result in regional air emissions increases in excess of BAAQMD ozone precursor significance thresholds. As such, even with the implementation of mitigation identified for the project, the long-term regional air quality impacts of project ozone precursor emissions are considered cumulatively considerable. No additional mitigation, beyond Mitigation Measure 4.G-4 has been identified for this impact and Project ozone precursor and PM<sub>10</sub> emissions will result in a cumulatively significant air quality impact.

Impact 4.G-7 identifies that the project will contribute to GHG emissions. Global emissions of GHG are expected to result in global warming and potential consequences discussed in Chapter 4. While project emissions will be very small in relation to worldwide and even U.S. and statewide emissions, the project's contribution to cumulative GHG emissions is considered cumulatively significant. Although the project-specific impact associated with GHG emissions will be mitigated to less than significant with the implementation of Mitigation Measure 4.G-4, it is anticipated that the project will still result in a net increase in GHG emissions. For the purposes of this Draft EIR, a net increase in GHG emissions is considered cumulatively significant. No additional mitigation, beyond Mitigation Measure 4.G4, has been identified for this impact and Project GHG emissions will result in a cumulatively significant air quality impact.

## **4.G-5 PREPARERS AND REFERENCES**

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### **References**

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## **4.H NOISE**

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This section addresses the noise constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. This section discusses the potential noise impacts due to, and upon the project site. This section provides information on the existing noise environment, impacts associated with the development of the project, impacts upon the project site, and mitigation measures to ensure compliance with state and local criteria.

### **4.H-1 ENVIRONMENTAL SETTING**

#### **Regional Setting**

Contra Costa County is highly industrialized in the western and northern communities, while the inland areas contain a mix of urban and suburban residential, commercial, light industry and agricultural uses. The County consists of 19 incorporated cities and towns and 22 unincorporated communities. The main sources of noise are from vehicular traffic along the interstates and major arterial roads, rail operations and existing airport traffic. The remaining sources of noise are related to oil refineries and materials processing plants. Potential foreseeable noise sources are expected to be similar to existing sources.

The Town of Moraga is primarily a residential community with no industries or other stationary sources of substantial noise. Noise levels vary within the town depending on proximity to major roadways and type of land use. The primary commercial areas within the Town are clustered around the intersections of Rheem Boulevard/Moraga Road and Moraga Road/Moraga Way. Future noise issues are expected to be noise produced by commercial uses and increased traffic along regional roadways (e.g., Moraga Way and Moraga Road).

#### **Acoustic Terminology<sup>1</sup>**

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds, and is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective: one person's music is another's headache.

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<sup>1</sup> For an explanation of these terms, see Appendix F: "Acoustical Terminology"

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor,  $L_{dn}$ , and shows very good correlation with community response to noise.

The day/night average level ( $L_{dn}$ ) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because  $L_{dn}$  represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 4.H-1 lists several examples of the noise levels associated with common situations.

**Table 4.H-1****Typical Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. October 1998.

**Effects of Noise on People**

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning

- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

## **Major Noise Sources in the Project Vicinity**

### ***Transportation***

Vehicle traffic on Moraga Way, Moraga Road and the local street system is one of the primary noise sources within the project site. Moraga Way and Moraga Road are the primary roads connecting the Town of Moraga to the surrounding East Bay area. Moraga Way serves as a primary truck route connecting the Town of Moraga to State Route (S.R.) 24 within the City of Orinda. The Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to determine the existing traffic noise levels at the identified noise sensitive land uses within the project vicinity. The FHWA Model is based

upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model inputs consisted of existing traffic volumes and traffic assumptions based on site observations. A compete listing of the FHWA model inputs is provided in Appendix F.

Table 4.H-2 shows the predicted existing traffic noise levels in terms of the Day/Night Average Level descriptor (Ldn) at a standard distance of 100 feet from the centerlines of the existing immediate project-area roadways for existing conditions, as well as distances to existing traffic noise contours. The extent that existing land uses in the project vicinity are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise.

**Table 4.H-2**

Existing Baseline Traffic Noise Levels

Roadway	Segment	Distance <sup>1</sup>	Traffic Noise Level, Ldn (dBA)	Distance to Contours (feet)		
				70 Ldn	65 Ldn	60 Ldn
Moraga Way	Ivy Dr to St. Andrews	75	63.9	30	64	137
Moraga Way	St. Andrews to School St	75	62.5	24	51	110
Moraga Way	School St to Moraga Rd	75	62.2	23	49	105
St. Mary's Pkwy	East of Moraga Road	75	60.2	17	36	78
St. Andrews	South of Moraga Way	75	54.4	7	15	32
St. Andrews	North of Moraga Way	75	53.0	6	12	26
School St	South of Moraga Way	75	50.0	3	8	16
School St	North of Moraga Way	75	52.2	5	11	23
Canyon Rd	South of Moraga Way	75	63.9	30	64	137
Moraga Rd	Moraga Way to St. Mary's	75	64.3	31	67	145
Moraga Rd	St. Mary's to Corliss Dr	75	62.8	25	54	116

<sup>1</sup> Distances are reference distances from centerline of roadway.

--Traffic volume was not available for this segment.

### ***Non-Transportation***

Mixed use and commercial land uses along the Moraga Way and Moraga Road corridors, which include warehouses, automotive repair, and shopping centers, inherently have noise producing components associated with their operations.

Noise sources associated with these types of land uses include, but are not limited to:

HVAC Systems	Cooling Towers/Evaporative Condensers
Loading Docks	Lift Stations
Emergency Generators	Pneumatic Tools
Steam Valves	Generators
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Cutting Equipment	Outdoor Speakers
Fans	Welding Equipment

### **Noise-Sensitive Land Uses in the Project Vicinity**

Noise sensitive land uses in the immediate project vicinity consist of single-family and multi-family residential, and to some extent office uses.

### **Existing Ambient Noise Levels**

To quantify existing ambient noise levels in the vicinity of the project site, j.c. brennan & associates, Inc., conducted continuous 24-hour noise level measurements at two locations within the project area, on June 2-3, 2008. In addition, 2 sets of short-term noise level measurements were conducted at three locations within the project area. The intent of the 24-hour continuous and short-term noise level measurements was to determine the existing background noise levels on, and in the project vicinity. The results of the noise level measurements are shown in Table 4.H-3. Continuous noise monitoring results are presented graphically in Appendix F. The noise measurement sites are shown on Figure 4.H-1.

Equipment used for the noise measurements included Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters. The meters were calibrated before and after use with an LDL CAL200 acoustical calibrator to ensure the accuracy of the measurements. The measurement system meets all pertinent specifications of the American National Standards Institute (ANSI) for precision sound level measurement equipment.

**Table 4.H-3**

## Existing Ambient Noise Monitoring Results (June 2-3, 2007)

Site	Location	Date	Average Measured Hourly Noise Levels, dBA					
			Ldn	Daytime (7:00 am - 10:00 pm)			Nighttime (10:00 pm - 7 am)	
				Leq	L50	Lmax	Leq	L50
Short-term Noise Measurement Sites								
1	North of Moraga Way in Area 9	6-2-08 6-3-08	NA	65.7 62.6	62.6 60.1	76.1 74.3	@ 2:20 p.m. @ 12:54 p.m.	
2	South on project site in Area 14	6-2-08 6-3-08	NA	44.4 44.8	43.4 44.3	56.2 52.4	@ 2:40 p.m. @ 1:10 p.m.	
3	Northeast on project site in Area 7	6-2-08 6-3-08	NA	61.0 63.3	60.8 61.7	66.8 74.9	@ 2:55 p.m. @ 1:33 p.m.	
Continuous 24-hour Noise Measurement Sites								
A	134 Danefield Place, North of Project Site	June 2-3, 2008	51.0 dB	48.1	47.3	64.8	43.5	42.7
B	4 Southard Court, South of Project Site	June 2-3, 2008	49.8 dB	47.4	42.7	65.9	42.1	38.0
Source – j.c. brennan & associates, Inc. - 2008								

# MORAGA CENTER SPECIFIC PLAN

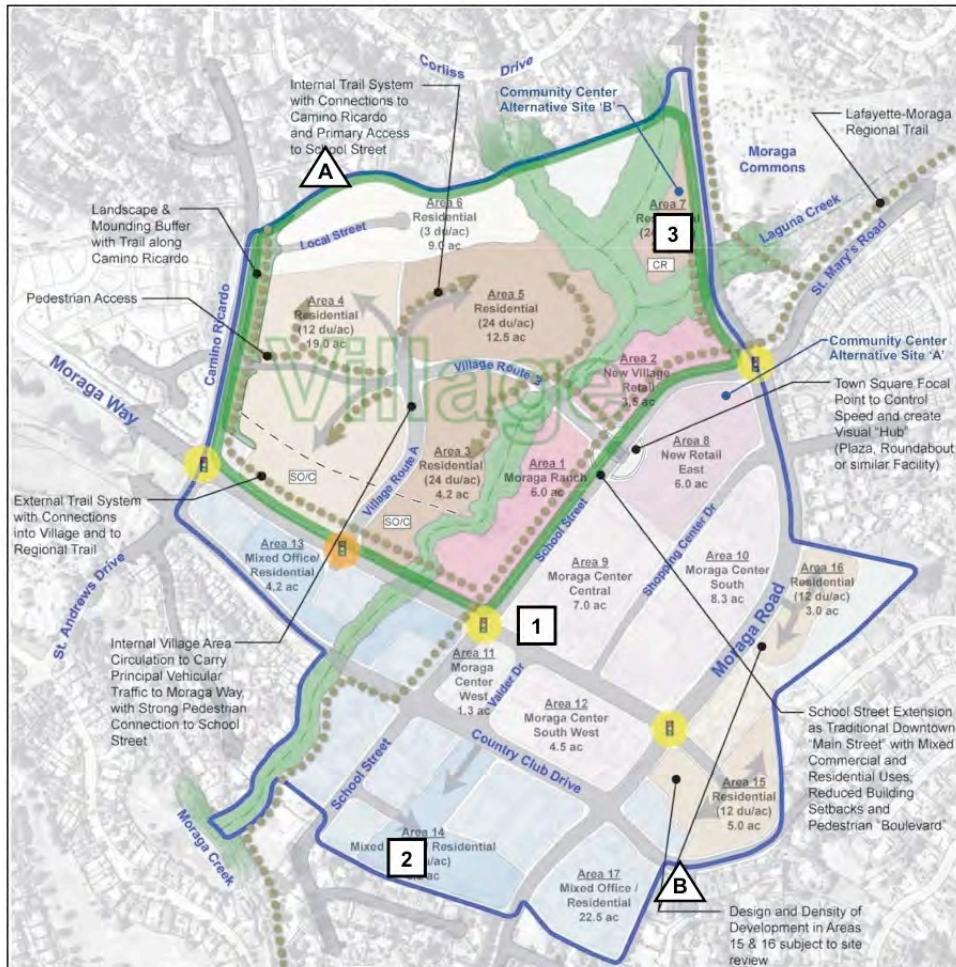
DRAFT ENVIRONMENTAL IMPACT REPORT

## Figure 4.H-1 MCSP Noise Measurement Sites

Figure 4.H-1

Moraga Center Specific Plan – Town of Moraga, California

Noise Measurement Sites



j.c. brennan & associates  
consultants in acoustics

A description of each of the noise measurement sites is as follows:

**Site A**

This noise measurement site was located at 134 Danefield Place, on the north edge of the project site. This site represents existing residential uses adjacent to the north boundary of the project site.

**Site B**

This noise measurement site was located at 4 Southard Court, on the southeast edge of the project site. This site represents existing residential uses adjacent to the southeast boundary of the project site.

**Site 1**

This noise measurement site is located north of Moraga Way in sub-area 9. This site currently includes existing retail uses, and is proposed to continue to include retail and commercial uses.

**Site 2**

This noise measurement site is located in the southern portion of the project site in sub-area 14. Currently this area is vacant, and is proposed to include mixed office and residential uses.

**Site 3**

This noise measurement site is located in the northeast portion of the project site in sub-area 7. Currently this area is vacant, and is proposed to include residential uses.

## **4.H-2 REGULATORY SETTING**

This section identifies the local ordinances and other regulations and guidelines that comprise the regulatory framework for noise. The policies and criteria for evaluating projects are contained within the Moraga 2002 General Plan and General Plan Environmental Impact Report (EIR), and the Moraga Municipal Code.

### **Town of Moraga Goals, Objectives and Policies**

The following policies are contained within the Moraga 2002 General Plan Noise Element:

**OS6.1 Acoustical Standards.** Develop acoustical standards that property reflect acceptable sound emission levels;

**OS6.2 Noise Levels.** Ensure that noise from all sources is maintained at levels that will not adversely affect adjacent properties or the community, especially during evening and early morning hours. Reasonable exceptions may be made in the interest of public safety;

**OS6.3 Noise Sensitive Uses.** Locate uses where they will be most acoustically compatible with elements of the man-made and natural environment.

**OS6.4 Noise Impacts of New Development.** Ensure that new development will not raise noise levels above acceptable levels on the Town's arterials and major local streets.

**OS6.5 Acoustical Data with Development Applications.** Require the submittal of acoustical data, when and where appropriate, as part of the development application process so that the noise impacts of proposed uses can be properly evaluated and mitigated.

**OS6.6 Temporary Noise Sources.** Permit temporary noise-generating activities such as construction only for the shortest reasonable duration and in locations that will have the least possible effect.

**OS6.7 Vehicle Noise.** Require that vehicles, including those used for recreational purposes, be used in such a manner that they will not intrude on the peace and quiet of residential areas. Reasonable exceptions may be made in the interest of public safety.

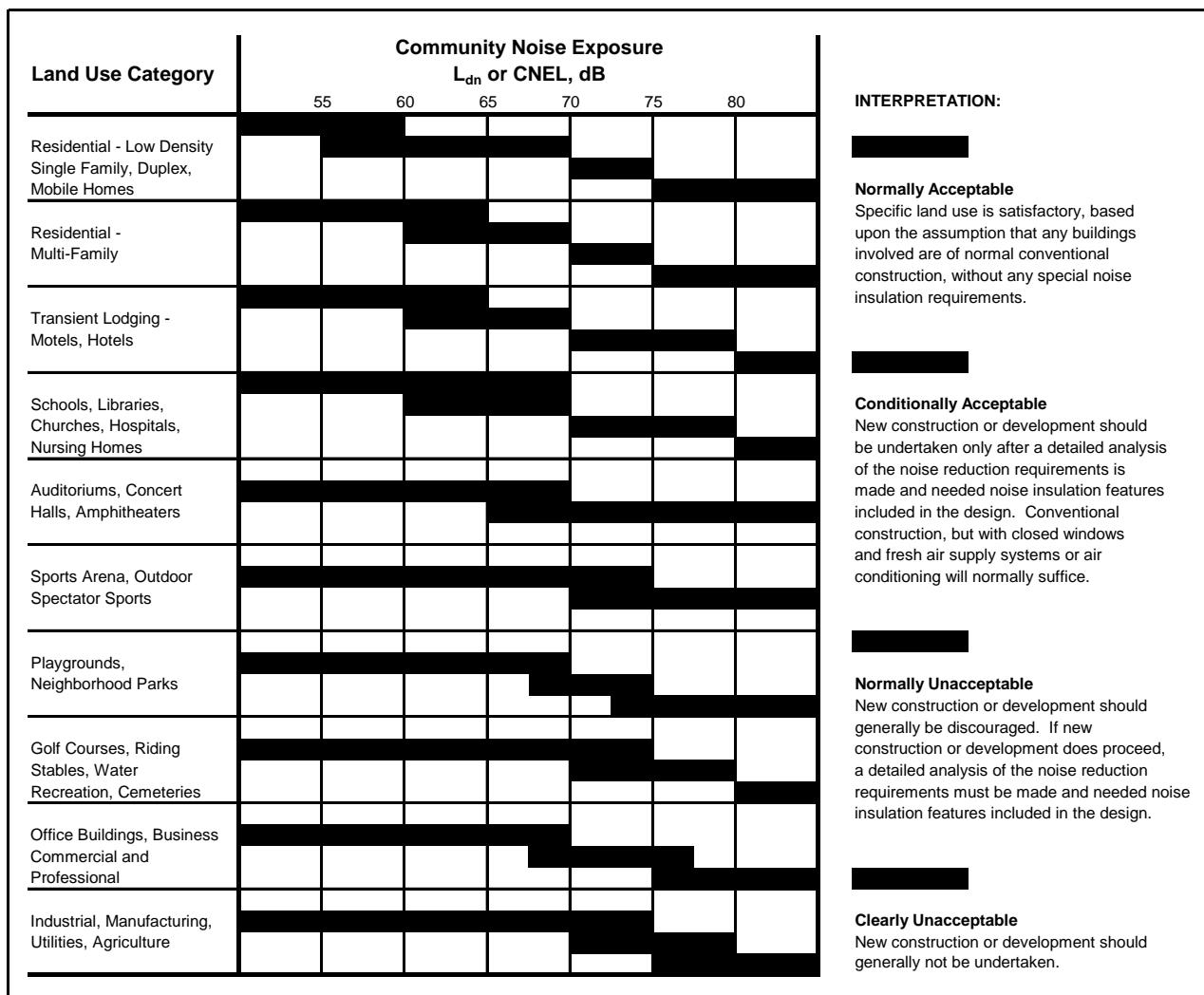
**OS6.8 Public Information on Noise Pollution.** Whenever appropriate, use public information programs to educate the public on the value of an environment that is free of noise pollution.

## **2002 General Plan EIR**

The 2002 General Plan EIR contains the recommendation that the suggested criteria for evaluating land use compatibility provided in the State of California's *Guidelines for the Preparation and Content of the Noise Element of the General Plan* should be used in determining compatibility of new proposed projects with existing or planned uses on surrounding sites. The State's Guidelines also establish an interior noise level criterion of 45 dB Ldn. The intent of this standard is to provide a suitable environment for communication and sleep. These criteria are shown in Table 4.H-4.

**Table 4.H-4**

## Land Use Compatibility for Community Noise Environments



Source: California Department of Health Services, 1990

## **Town of Moraga Municipal Code**

### ***Chapter 7.12 Noise Control***

7.12.090 Construction of buildings and projects. It is unlawful except in case of emergency work for a person within a residential zone or within a radius of five hundred (500) feet of one to operate equipment or perform outside construction or repair work on a building, structure or project, or to operate a pile driver, power shovel, pneumatic hammer, derrick, power hoist or other construction type device (between the hours of five p.m. of one day and eight a.m. of the next day) in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance.

7.12.120 Amplified sound. It is unlawful for a person to install, use or operate a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon a sound truck for the purpose of giving instruction, direction, talk, address, lecture or transmitting music to a person in or upon a public place where such use causes annoyance or discomfort to a reasonable person of normal sensitiveness in a residential neighborhood in the quiet and peaceful enjoyment of his or her property.

### ***Chapters 8.36 Community Commercial District and 8.40 Limited Commercial District***

8.36.020 Uses permitted subject to findings and 8.40.030 Conditional Uses. Before a use listed in subsection A of this section is permitted in this district, the planning commission must determine that the use will not generate noise levels in excess of fifty-five (55) dBA during the daytime hours, or fifty (50) dBA during the nighttime hours.

### ***Chapter 8.96 Condominium Conversions.***

8.96.090 Specific physical standards. C-2 Noise standards. The structure shall conform to interior and exterior sound transmission standards of Chapter 35 (Appendix) of the Uniform Building Code. Where present standards cannot be reasonably met, the planning commission may require the applicant to notify potential buyers of the noise deficiency currently existing within these units.

## **Determination of a Significant Increase in Noise Levels**

Another means of determining a potential noise impact is to assess a person's reaction to changes in noise levels due to a project. Table 4.H-5 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels.

**Table 4.H-5**

## Subjective Reaction to Changes in Noise Levels of Similar Sources

Change in Level, dBA	Subjective Reaction	Factor Change in Acoustical Energy
1	Imperceptible (Except for Tones)	1.3
3	Just Barely Perceptible	2.0
6	Clearly Noticeable	4.0
10	About Twice (or Half) as Loud	10.0

Source: Architectural Acoustics, M. David Egan, 1988.

**Criteria for Acceptable Vibration**

The City of Moraga does not contain specific policies or criteria pertaining to vibration levels. Because the project site is expected to include significant construction, the effects of construction related vibration are considered in this analysis.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 4.H-6, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 4.H-6 indicates that the threshold for damage to structures ranges from 2 to 6 in/sec. One-half this minimum threshold or 1 in/sec peak particle velocity (PPV) is considered a safe criterion that would protect against architectural or structural damage. The general threshold at which human annoyance could occur is noted as 0.1 in/sec PPV.

**Table 4.H-6**

## Effects of Various Vibration Levels on People and Buildings

Peak Particle Velocity inches/second	Peak Particle Velocity mm/second	Human Reaction	Effect on Buildings
0-.006	0.15	Imperceptible by people	Vibrations unlikely to cause damage of any type
.006-.02	0.5	Range of Threshold of perception	Vibrations unlikely to cause damage of any type
.08	2.0	Vibrations clearly perceptible	Recommended upper level of which ruins and ancient monuments should be subjected
0.1	2.54	Level at which continuous vibrations begin to annoy people	Virtually no risk of architectural damage to normal buildings
0.2	5.0	Vibrations annoying to people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
1.0	25.4		Architectural Damage
2.0	50.4		Structural Damage to Residential Buildings
6.0	151.0		Structural Damage to Commercial Buildings

Source: Survey of Earth-borne Vibrations due to Highway Construction and Highway Traffic, Caltrans 1976

**Evaluation Criteria**

CEQA guidelines state that implementation of the project would result in significant noise impacts if the project would result in either of the following:

- a. Exposure of persons to or generation of noise levels in excess of standards established in the City of Moraga. Specifically, exterior and interior noise levels of 60 dB Ldn and 45 dB Ldn, respectively, for residential uses exposed to transportation noise sources. For stationary noise sources associated with commercial uses, the noise level criteria contained within Chapters 8.36 and 8.40, which require that the commercial will not generate noise levels in excess of fifty-five (55) dBA during the daytime hours, or fifty (50) dBA during the nighttime hours. These criteria are similar to those which are contained within the Office of Noise Control Model Noise Control Ordinance. Therefore, it is assumed that the criteria are based upon an hourly average or median (Leq/L50) descriptor.

- b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels. Specifically, a threshold of 1 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage.
- c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, typically defined as 3 dB or greater.
- d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, typically defined as greater than 3 dB.
- e. For a project located within an airport land use plan or, where such a plan has not be adopted, within two miles of a public airport or public use airport, where the project would expose people residing or working in the area to excessive noise levels.
- f. For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

For this project, the significance of anticipated noise effects are based on a comparison between predicted noise levels and noise criteria defined by the City. For this project, noise impacts are considered significant if the proposed noise sensitive land uses would be exposed to noise levels in excess of the standards as described earlier in this report, or if the project results in a traffic noise level increase consistent with Table 4.H-5 of this report. This project site is not located within an airport land use plan, within two miles of a public airport, or within the vicinity of a private airstrip.

Table 4.H-7 presents criteria for analysis of noise impacts.

**Table 4.H-7**

**Evaluation Criteria with Points of Significance**

<b>Evaluation Criteria</b>	<b>As Measured by</b>	<b>Point of Significance</b>	<b>Justification</b>
4.H-1. Will operation of the Project expose people to high noise levels or ground-borne vibration?	Peak Particle Velocity (P.P.V.) as measured in inches per second.	1 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage.	Survey of Earth-borne Vibrations due to Highway Construction and Highway Traffic, Caltrans 1976. Effects of Various Vibration Levels on People and Buildings Table 4.H-6
4.H-2. Will Project construction expose people to	Projected noise levels at adjacent residences	No construction activities between	Town of Moraga Municipal Code, Chapter

**Table 4.H-7**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
high noise levels or ?	and other noise sensitive land uses	hours of 5:00 p.m. of one day to 8:00 a.m. of the next day.	7.12 Article 3 7.12.090;
4.H-3: Will Project traffic result in traffic noise level increases at existing land uses in the project area.	Increases in project-related noise levels at adjacent residences and other noise sensitive land uses, Ldn.	The project results in an increase in traffic noise levels of greater than 3 dB Ldn, as described in Table 4.H-5	CEQA guidelines. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, typically defined as 3 dB or greater. Table 4.H-5
4.H-4: Will Project traffic result in traffic noise levels at proposed land uses which will exceed the acceptable exterior noise level standards.	Projected noise levels at adjacent residences and other noise sensitive land uses, Ldn.	Exterior noise levels greater than 60 dBA Ldn at residential uses.	Town of Moraga General Plan; 2002 Moraga General Plan EIR; Table 4.H-5
4.H-5: Will the development of commercial, retail and office uses result in noise sources which impact existing and future noise-sensitive uses in the project area.	Projected noise levels at adjacent residences and other noise sensitive land uses, average or median Leq/L50 descriptor.	The use shall not generate noise levels greater than 55 dBA during daytime hours, or 50 dBA during nighttime hours.	Town of Moraga Municipal Code, Chapters 8.36.020 and 8.40.030; Office of Noise Control Model Noise Control Ordinance

**Traffic Noise Impact Assessment Methodology**

To assess noise impacts due to project-related traffic increases on the existing local roadway network, traffic noise levels are predicted at a representative distance for Existing, Existing Plus Project, Approved, Approved Plus Project, Cumulative and Cumulative Plus Project scenarios.

The FHWA traffic noise prediction model was used to predict traffic noise levels at a representative distance of 75 feet from the roadway centerline. Table 4.H-8 shows the predicted traffic noise level increases on the local roadway network for Existing and Existing Plus Project conditions. Table 4.H-9 shows the predicted traffic noise level increases on the local roadway network based upon Approved and the Approved Plus

Project conditions. Table 4.H-10 shows the predicted traffic noise level increases on the local roadway network for Cumulative and the Cumulative Plus Project conditions.

The 60 dB Ldn exterior noise level criterion will be used for assessing noise impacts associated with traffic noise at new residential uses. An increase in traffic noise levels of greater than 3 dB will be used to assess traffic noise impacts associated with the project at existing residential uses.

### **Future Noise-Producing Land Use Impact Assessment Methodology**

There are a variety of noise sources associated with future development within the project area that have the potential to create noise levels in excess of the applicable noise standards or result in annoyance at existing and future noise-sensitive developments within the project area. Such uses include commercial retail, parks, and elementary schools.

At this time specific uses are not known and detailed site and grading plans have not yet been developed. As a result, it is not feasible to identify specific noise impacts associated with each of the proposed uses. However, a general discussion and assessment of impacts can be conducted based upon the possible types of uses associated with these land use designations. The following is a discussion of the potentially significant noise sources associated with the various types of proposed uses:

#### ***Commercial Retail Land Uses***

Commercial retail activities can also produce noise that affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components that may be annoying to individuals who live in the nearby vicinity. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels. The primary noise sources generally include truck deliveries, on-site truck circulation, trash pickup, parking lot use, HVAC equipment and loading docks.

#### ***Mechanical Equipment***

Heating, air conditioning and ventilation equipment can be a primary noise source associated with commercial or retail uses. These types of equipment are often mounted on rooftops, located on the ground or located within mechanical rooms. The noise sources can take the form of fans, pumps, air compressors, chillers or cooling towers. Noise levels from these types of equipment can vary significantly. Noise levels from these types of sources generally range between 45 dB to 70 dB at a distance of 50 feet. However, numerous noise control strategies can be utilized to mitigate noise levels to less than significant levels.

Table 4.H-8

## Predicted Existing and Existing + Project Traffic Noise Levels

Roadway	Segment	Distance <sup>1</sup>	Traffic Noise Levels (Ldn dBA)			Distance to contours (feet) Existing			Distance to Contours (feet) Existing + Project		
			Existing	Existing + Project	Change	70 Ldn	65 Ldn	60 Ldn	70 Ldn	65 Ldn	60 Ldn
Moraga Way	Ivy Dr to St. Andrews	75	62.6	63.0	0.4	24	52	111	26	55	119
Moraga Way	St. Andrews to School St	75	62.5	62.9	0.4	24	51	110	25	54	117
Moraga Way	School St to Moraga Rd	75	62.2	62.6	0.4	23	49	105	24	52	113
St. Mary's Pkwy	East of Moraga Road	75	60.2	60.9	0.7	17	36	78	19	40	87
St. Andrews	South of Moraga Way	75	54.4	54.4	0.0	7	15	32	7	15	32
Camino Ricardo	North of Moraga Way	75	53.0	53.0	0.0	6	12	26	6	12	26
School St	South of Moraga Way	75	50.0	50.0	0.0	3	8	16	3	8	16
School St	North of Moraga Way	75	52.2	52.2	0.0	5	11	23	5	11	23
Canyon Rd	South of Moraga Way	75	63.9	64.4	0.5	30	64	137	32	68	147
Moraga Rd	Moraga Way to St. Mary's	75	64.3	64.6	0.3	31	67	145	33	70	152
Moraga Rd	St. Mary's to Corliss Dr	75	62.8	63.8	1.0	25	54	116	29	62	134

Source – j.c. brennan &amp; associates, Inc. – 2008

<sup>1</sup>Distances are reference distances from centerline of roadway

**Table 4.H-9**

## Predicted Approved and Approved + Project Traffic Noise Levels

Roadway	Segment	Distance <sup>1</sup>	Traffic Noise Levels (Ldn dBA)			Distance to contours (feet) Approved			Distance to Contours (feet) Approved + Project		
			Approved	Approved + Project	Change	70 Ldn	65 Ldn	60 Ldn	70 Ldn	65 Ldn	60 Ldn
Moraga Way	Ivy Dr to St. Andrews	75	62.7	63.1	0.4	25	53	114	26	56	122
Moraga Way	St. Andrews to School St	75	62.6	63.1	0.5	24	52	112	26	56	120
Moraga Way	School St to Moraga Rd	75	62.3	62.8	0.5	23	50	107	25	53	115
St. Mary's Pkwy	East of Moraga Road	75	60.4	61.1	0.7	17	37	80	19	41	88
St. Andrews	South of Moraga Way	75	54.4	54.4	0.0	7	15	32	7	15	32
Camino Ricardo	North of Moraga Way	75	53.0	53.0	0.0	6	12	26	6	12	26
School St	South of Moraga Way	75	50.0	50.0	0.0	3	8	16	3	8	16
School St	North of Moraga Way	75	52.2	52.2	0.0	5	11	23	5	11	23
Canyon Rd	South of Moraga Way	75	64.2	64.6	0.4	31	66	143	33	71	153
Moraga Rd	Moraga Way to St. Mary's	75	64.5	64.8	0.3	32	69	149	34	72	156
Moraga Rd	St. Mary's to Corliss Dr	75	63.0	63.9	0.9	26	55	119	30	64	137

Source – j.c. brennan &amp; associates, Inc. – 2008

<sup>1</sup>Distances are reference distances from centerline of roadway

**Table 4.H-10**

Predicted Cumulative and Cumulative + Project Traffic Noise Levels

Roadway	Segment	Distance <sup>1</sup>	Traffic Noise Levels (Ldn dBA)			Distance to contours (feet) Cumulative			Distance to Contours (feet) Cumulative + Project		
			Cumulative	Cumulative + Project	Change	70 Ldn	65 Ldn	60 Ldn	70 Ldn	65 Ldn	60 Ldn
Moraga Way	Ivy Dr to St. Andrews	75	63.2	63.6	0.4	27	57	123	28	61	131
Moraga Way	St. Andrews to School St	75	63.1	63.5	0.4	26	56	121	28	59	128
Moraga Way	School St to Moraga Rd	75	62.9	63.3	0.4	25	54	116	27	58	124
St. Mary's Pkwy	East of Moraga Road	75	61.2	61.7	0.5	19	42	90	21	45	98
St. Andrews	South of Moraga Way	75	54.8	54.8	0.0	7	16	34	7	16	34
Camino Ricardo	North of Moraga Way	75	53.7	53.7	0.0	6	13	28	6	13	28
School St	South of Moraga Way	75	51.1	51.1	0.0	4	9	19	4	9	19
School St	North of Moraga Way	75	52.8	52.8	0.0	5	12	25	5	12	25
Canyon Rd	South of Moraga Way	75	64.8	65.2	0.4	34	73	156	36	77	166
Moraga Rd	Moraga Way to St. Mary's	75	65.0	65.2	0.2	35	75	161	36	78	168
Moraga Rd	St. Mary's to Corliss Dr	75	63.5	64.3	0.8	28	59	128	31	68	146

Source – j.c. brennan &amp; associates, Inc. – 2008

<sup>1</sup>Distances are reference distances from centerline of roadway

### *Loading Docks*

Loading docks and their associated activities have a potential to produce noise levels that exceed the noise level criteria at adjacent noise sensitive land uses. Noise sources associated with loading docks include trucks idling, truck circulation on the sites, refrigeration units on trucks, pallets dropping and fork lifts operating on the site.

Noise monitoring conducted at loading docks indicate that typical hourly average noise levels at a distance of 50 feet can range between 55 dB Leq and 60 dB Leq, and maximum noise levels range between 75 dB and 80 dB at a distance of 50 feet.

Generally sound walls and setbacks can be used to mitigate loading dock and truck circulation noise impacts. These strategies can be utilized individually or in combination with one another.

### **Construction Noise Impact Assessment Methodology**

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 4.H-11, ranging from 85 to 90 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways and on-site grading. A significant project-generated noise source would include truck traffic associated with transport of heavy materials and equipment to and from construction sites and the movement of heavy construction equipment on the project site, especially during site grading. This noise increase would be of short duration, and would likely occur primarily during daytime hours.

**Table 4.H-11**

#### Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Environmental Noise Pollution, Patrick R. Cunniff, 1977.

## Construction Vibration Impact Methodology

The types of construction vibration impact include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 4.H-12 shows the typical vibration levels produced by construction equipment.

**Table 4.H-12**

### Vibration Levels for Varying Construction Equipment

Type of Equipment	Peak Particle Velocity @ 25 feet	Approximate Velocity Level @ 25 feet
Large Bulldozer	0.089 (inches/second)	87 (VdB)
Loaded Trucks	0.076 (inches/second)	86 (VdB)
Small Bulldozer	0.003 (inches/second)	58 (VdB)
Auger/drill Rigs	0.089 (inches/second)	87 (VdB)
Jackhammer	0.035 (inches/second)	79 (VdB)
Vibratory Hammer	0.070 (inches/second)	85 (VdB)
Vibratory Compactor/roller	0.210 (inches/second)	94 (VdB)

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006

## 4.H-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.H-13 presents potential noise impacts, outlines points of significance, type of impact and also ranks the level of significance for all Alternatives. The potential for noise conflicts is determined by the location of the project in proximity to existing noise sources and the project's potential to increase ambient noise levels. Construction and traffic noise levels are the primary noise concerns for all the Alternatives.

**Table 4.H-13**

## Noise Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.H-1. Will operation of the Project expose people to high noise levels or ground-borne vibration?	1 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage.	P	Proposed Project ○ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.H-2. Will Project construction expose people to high noise levels or ?	The project results in an increase in traffic noise levels of greater than 3 dB Ldn, as described in Table 4.H-5	C	Proposed Project ⊖ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.H-3: Will Project traffic result in traffic noise level increases at existing land uses in the project area.	The project results in an increase in traffic noise levels of greater than 3 dB Ldn, as described in Table 4.H-5	P	Proposed Project ○ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.H-4: Will Project traffic result in traffic noise levels at proposed land uses which will exceed the acceptable exterior noise level standards.	Exterior noise levels greater than 60 dBA Ldn at residential uses.	P	Proposed Project ⊖ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.H-5: Will the development of commercial, retail and office uses result in noise sources which impact existing and future noise-sensitive uses in the project area.	The use shall not generate noise levels greater than 55 dBA during daytime hours, or 50 dBA during nighttime hours.	P	Proposed Project ⊖ Alternative 1 (No Project-Existing Conditions) == Alternative 2 (339 Unit Alternative-GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖

Source: HBA 2008

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Notes:	1. Type of Impact:	2. Level of Significance:
C	Construction	● Significant impact before and after mitigation
P	Permanent	○ Significant impact before mitigation; less than significant impact after mitigation
		○ Less than significant impact; no mitigation proposed
		== No impact

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**Impact:** **4.H-1. Will operation of the Project expose people to high noise levels or ground-borne vibration?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not involve construction or operation of new facilities and therefore will have no noise impacts.

**Analysis:** *Less than Significant; Proposed Project and Action Alternatives*

The primary construction activities associated with the project and project alternatives would occur when the infrastructure such as buildings and utilities are constructed. In comparing criteria for acceptable vibration levels (Table 4.H-6) to potential vibration impacts (Table 4.H-12), it is not expected that vibration would cause any structural damage.

**Mitigation:** No mitigation is required.

**Impact:** **4.H-2. Will Project construction expose people to high noise levels or ground borne vibration?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not involve construction or operation of new facilities and therefore will have no noise impacts.

*Significant Impact before Mitigation; Proposed Project and Action Alternatives*

The Proposed Project would add up to 720 dwelling units and the other Action Alternatives would add from 339 to 560 dwelling units. The Proposed Project and Action Alternatives would also permit additional commercial development in Moraga's two commercial districts. Short-term, temporary increases in noise due to construction may also be experienced by neighboring residents near the two commercial districts and near the development sites of new single-family homes. Construction activities include: site clearing, grading, roadway paving, building construction and finishing work. These noise level increases would represent a short-term significant impact.

In order to ensure the noise impacts are less than significant, Moraga requires property owners to implement noise mitigation measures during construction. The Town also has a design review process that considers

traffic and noise issues during the review of new development projects. Under the Moraga 2002 General Plan, the Town will continue to implement existing requirements for noise mitigation in project design, construction, and operation as part of its development permit process.

**Mitigation: 4.H-2. Implement Noise Control Measures during Construction Phase**

Construction of the Project will utilize the following noise control measures in order to minimize noise disturbances at sensitive receptors during construction activities:

- Consistent with the Health and Safety Code Section 7.12.090 Construction of buildings and projects. It is unlawful except in case of emergency work for a person within a residential zone or within a radius of five hundred (500) feet of one to operate equipment or perform outside construction or repair work on a building, structure or project, or to operate a pile driver, power shovel, pneumatic hammer, derrick, power hoist or other construction type device (between the hours of five p.m. of one day and eight a.m. of the next day) in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance.
- Newer construction equipment with improved noise muffling shall be used and all construction equipment items shall have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators intact and operational.
- All construction equipment shall be inspected weekly to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding, etc.).
- Wherever possible, hydraulic tools shall be used instead of pneumatic impact tools.
- Heavy construction truck trips shall be routed over streets that will cause the least noise disturbance to residences or businesses in the vicinity of the Project site.
- Construction staging areas, maintenance yards, and other construction-oriented operations shall not be located as far as reasonably possible from sensitive receptors.

**After**

**Mitigation: Less than Significant- Proposed Project and Action Alternatives**

**Impact** **4.H-3: Will Project traffic result in traffic noise level increases at existing land uses in the project area?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not result in additional traffic and therefore will have no noise impacts.

**Analysis:** *Less than Significant; Proposed Project and Action Alternatives*

Existing residences located along major roadways in the vicinity of the project area will be exposed to elevated traffic noise levels under existing and cumulative buildup conditions either with or without the project. Tables 4.H-8, 4.H-9 and 4.H-10 indicate that the project will not result in traffic noise levels of more than 1 dB. Based upon Table 4.H-5 and the test of significance criteria, this increase will not be perceptible, and will not result in a significant impact.

Based upon the analysis, the Action Alternatives result in less traffic than the Proposed Project. In no case do these alternatives result in more than a 25% change in traffic volumes, when compared to the project. Therefore, the change in traffic noise levels is very small and not significant.

**Mitigation:** No mitigation is required.

**Impact** **4.H-4: Will Project traffic result in traffic noise levels at proposed land uses which will exceed the acceptable exterior noise level standards?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not result in new uses, and therefore will have no noise impacts.

*Significant Impact before Mitigation; Proposed Project and Action Alternatives*

The Proposed Project would add up to 720 dwelling units and the other Action Alternatives would add from 339 to 560 dwelling units. The Proposed Project and Action Alternatives would result in residential uses along Camino Ricardo, Moraga Way, Moraga Road, Country Club Drive, and Canyon Way. In addition, residential development would occur on internal street systems. Under the Cumulative Plus Proposed Project scenario, and the alternatives, no residential uses are expected to exceed the applicable exterior noise level criterion of 60 dB Ldn on the internal street system, Camino Ricardo, and Country Club Drive. Traffic noise levels at proposed residential uses adjacent to Canyon Way (South of Moraga Way), Moraga Way (Between St. Andrews and School Street), and Moraga Road (Between St. Mary's and Corliss Drive and Moraga Way to St. Mary's) would be exposed to traffic noise levels which exceed

the 60 dB Ldn noise level criterion for the Proposed Project and the Action Alternatives. As a means of complying with the City of Moraga noise level criterion of 60 dB Ldn, the following mitigation measure should be included in the project design.

**Mitigation: 4.H-4. Implement Noise Control Measures when Reviewing New Residential Projects**

Construction of the Project will utilize the following noise control measures when reviewing new residential development within the Specific Plan Area:

- When tentative maps are available for new residential development adjacent to Canyon Way (South of Moraga Way), Moraga Way (Between St. Andrews and School Street), and Moraga Road (Between St. Mary's and Corliss Drive and Moraga Way to St. Mary's) a detailed analysis of noise impacts shall be conducted. A preliminary barrier analysis indicates that barriers ranging between 5 and 6-feet in height would be required, provided that outdoor activity areas (patios) are located adjacent to the roadways.

Mitigation can also be provided through site design. For instance, having housing fronting toward the major roadways, and shielding back yards or patios with the building façades can also be an effective mitigation.

Setbacks can also be used as mitigation. The setbacks to the 60 dB Ldn contour range from 128 feet along Moraga Way (from St. Andrews to School Street), to 168 feet along Moraga Road (from Moraga Way to St. Mary's).

**After**

**Mitigation:** *Less than Significant- Proposed Project and Action Alternatives*

**Impact** **4.H-5: Will the Development of Commercial, Retail and Office Uses Result in Noise Sources which Impact Existing and Future Noise-Sensitive Uses in the Project Area?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not result in new uses, and therefore will have no noise impacts.

*Significant Impact before Mitigation; Proposed Project and Action Alternatives*

Noise impacts associated with future uses developed within the commercial, retail and office areas cannot practically be evaluated due to the wide range of variables that may affect such noise generation. Because the zoning of the commercial retail villages would allow for certain uses which could generate significant noise levels, the potential for

off-site adverse noise impacts exists, even though it cannot practically be quantified at this time. Therefore, this impact is considered potentially significant.

**Mitigation: 4.H-5. Implement Noise Control Measures when Reviewing New Commercial or Office Projects**

Construction of the Project will utilize the following noise control measures when reviewing new commercial or office developments within the Specific Plan Area:

- Consistent with the Municipal Code Sections 8.40 and 8.36, stationary noise sources associated with commercial uses shall not generate noise levels in excess of fifty-five (55) dBA during the daytime hours, or fifty (50) dBA during the nighttime hours. These criteria are similar to those contained within the Office of Noise Control Model Noise Control Ordinance. Therefore, it is assumed that the criteria are based upon an hourly average or median (Leq/L50) descriptor.
- During project review, the Planning Director shall make a determination as to whether or not the proposed use would likely generate noise levels that could adversely affect the adjacent residential areas. If it is determined from this review that proposed uses could generate excessive noise levels at noise-sensitive uses, the applicant shall be required to prepare an acoustical analysis to ensure that all appropriate noise control measures are incorporated into the project design so as to mitigate any noise impacts. Such noise control measures include, but are not limited to, use of noise barriers, site-redesign, silencers, partial or complete enclosures of critical equipment, etc.
- Where commercial uses are located, the primary noise sources are parking lot noise, HVAC equipment and light truck deliveries. In this case, 8 foot tall sound walls, would typically provide adequate isolation of parking lot and delivery truck activities. HVAC equipment should be located either at ground level or when located on roof-tops, the building facades should include parapets for shielding.
- Where commercial uses abut residential property lines, and loading docks or large truck circulation routes face the residential areas, the following mitigation measures shall be included in the project design:
  1. Loading docks shall maintain a minimum distance of 100 feet from residential property lines;
  2. Property line barriers shall be constructed to separate residential and commercial uses and should be 8 feet in height;
  3. Circulation routes for large trucks shall be located a minimum of 50-feet from the residential property lines;

4. All large heating, cooling and ventilation equipment shall be located within mechanical rooms where possible;
5. All heating, cooling and ventilation equipment shall be shielded from view with solid barriers;
6. Emergency generators shall comply with the local noise criteria.

- Where commercial land uses are separated from residential areas by local streets, all loading activities shall be limited to the opposite sides of the buildings from residential uses.

**After**

**Mitigation:** *Less than Significant- Proposed Project and Action Alternatives*

#### **4.H-4 CUMULATIVE IMPACTS**

There are Proposed Project impacts – either less than significant or significant – identified in the Noise section:

Less than significant project impacts related to noise were identified, due to temporary effects of project construction activity in the Town of Moraga. Construction of the project components is expected to be undertaken in phases over a period of several years, depending on market demand. While there is likely to be other construction activity over this time period, it is likely to occur at a very slow rate, reflecting the limited growth potential in the Town of Moraga. The construction activity would occur for relatively short periods of time, and although this could overlap with other construction projects the effects would be temporary and localized and therefore would not contribute to significant cumulative impacts.

The other potential significant cumulative impact is due to increased traffic noise levels. When comparing Table 4.H-2 (Existing Traffic Noise Levels) to Table 4.H-10 (Cumulative and Cumulative + Project Traffic Noise Levels), there are no increases in traffic noise levels of more than 2 dB.

Based upon Table 4.H-5 and the test of significance criteria, this increase will not be perceptible, and will not result in a significant impact.

Based upon the analysis, the alternatives result in less traffic than the proposed project. In no case do the alternatives result in more than a 25% change in traffic volumes, when compared to the project. Therefore, the change in traffic noise levels is very small and not significant.

## **4.H-5 PREPARERS AND REFERENCES**

### **Preparers**

Jim Brennan, j.c. brennan & associates, Inc.

### **Reviewers**

Rob Brueck, Hauge Brueck Associates

### **References**

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## 4.I BIOLOGICAL RESOURCES

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This section describes the vegetation, wildlife, habitats and special-status species that occur within the MCSP area; addresses potential project-specific and cumulative impacts to these resources and identifies mitigation measures that will reduce or avoid significant impacts.

### 4.I-1 ENVIRONMENTAL SETTING

#### Natural Communities

The Town of Moraga is a predominantly residential community located in southwestern Contra Costa County, between two major ridge systems. To the west is the Gudde Ridge and Berkeley/Oakland Hills, and to the east is the Las Trampas Ridge. The topography in the MCSP consists of nearly level valley bottom and gently sloping hills with elevations ranging from 480 feet to 650 feet above mean sea level (amsl). Located in the center of the Town and comprised mostly of developed areas and fallow orchards, the vegetation and wildlife in the MCSP area is limited and habitats are mostly disjunct from natural areas outside of Moraga. The MCSP area contains approximately 4.9 acres of non-native annual grassland southeast of Moraga Road, 67.3 acres of fallow orchards with an understory of non-native grassland, and 16.8 acres of central coast live oak riparian forest along Laguna Creek. These habitat types, which are described in more detail below, were identified during a field investigation conducted by Trevor A. Burwell, Ph.D. on April 10, 2008. Figure 4.I-1 provides a map of natural habitats in the MCSP area.

#### **Non-Native Grassland**

Approximately 4.9 acres of non-native grassland occurs on an open hillslope in the southeastern portion of the MCSP area. Management of grassland habitat consists of maintained perimeter fuel breaks adjacent to residential areas. This grassland community is dominated by introduced non-native annual grasses such as wild oats (*Avena fatua*), wild rye (*Lolium* spp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and wild barley (*Hordeum* spp.). Other common plant species include wild artichoke (*Cynara cardunculus*), geranium (*Geranium dissectum*), milk thistle (*Silybum marianum*), and bristly ox-tongue (*Picris echioides*).

Additional non-native annual grasslands occur on undeveloped parcels in the MCSP area. These undeveloped parcels have been graded and are mowed or disked to control weed growth and reduce fuels.

Grasslands provide foraging and nesting habitat for a wide variety of wildlife species including raptors, seed eating birds, small mammals, amphibians and reptiles. Wildlife species typically associated with non-native grasslands include

deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), western meadowlark (*Sturnella neglecta*), savannah sparrow (*Passerculus sandwichensis*), Gilbert's skink (*Eumeces gilberti*) and common garter snake (*Thamnophis sirtalis*). Grasslands also provide important foraging habitat for raptors such as the American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), and red-tailed hawk (*Buteo jamaicensis*).

### **Fallow Orchards**

Comprising approximately 67.3 acres, fallow orchards are the most common habitat type in the plan area. Management of the orchard consists of disking between trees to reduce weed growth and fuel accumulation. The orchards have a non-native grassland understory similar to that described above. Native trees and shrubs are colonizing orchard margins and in undisked areas adjacent to senescent trees. Colonizing species include coyote bush (*Baccharis pilularis*), poison oak (*Toxicodendron diversilobium*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*).

The abundant insect life found in the bark and foliage of the trees provides food for many bird species, and the trees may provide suitable foraging, cover, and nesting habitat for neotropical migrant songbirds (i.e., warblers, vireos, and grosbeaks). Examples of wildlife species found in this community include those associated with non-native grasslands as well as California slender salamander (*Batrachoseps attenuatus*), northern alligator lizard (*Gerrhonotus coeruleus*), western fence lizard (*Sceloporus occidentalis*), Northern Pacific rattlesnake (*Crotalus viridis oreganus*), Pacific gopher snake (*Pituophis melanoleucus catenifer*), scrub-jay (*Aphelocoma californica*), Nuttall's woodpecker (*Picoides nuttallii*), dark-eyed junco (*Junco hyemalis*), oak titmouse (*Baeolophus inornatus*), and raccoon (*Procyon lotor*).

### **Central Coast Live Oak Riparian Woodland**

Central coast live oak riparian woodland occurs on the banks and floodplain of Laguna Creek and its tributary channels in the MCSP area. The woodlands are not actively managed. Coast live oak (*Quercus agrifolia*) dominates the canopy at the upstream half of the drainage area near Moraga Road, with other species such as Fremont cottonwood (*Populus fremontii*), California bay, California buckeye (*Aesculus californica*), willows (*Salix* spp.), valley oak (*Quercus lobata*) and English walnut (*Juglans regia*) contributing most of the canopy cover towards the downstream end near Moraga Way and Country Club Drive. The understory contains a mix of non-native annual grassland species in canopy openings and native and non-native riparian shrubs and vines such as Himalayan blackberry (*Rubus discolor*), California blackberry (*Rubus ursinus*), coyote brush, poison oak, vinca (*Vinca major*), creeping snowberry (*Symphorocarpus mollis*) honeysuckle (*Lonicera involucrata*), and elderberry (*Sambucus mexicana*).

**MORAGA CENTER SPECIFIC PLAN**  
DRAFT ENVIRONMENTAL IMPACT REPORT

**Figure 4.I-1. Natural Vegetation and Habitat Types.**

# MORAGA CENTER SPECIFIC PLAN

## Natural Vegetation and Habitat Types

(05.05.08)



0' 100' 200' 300' 400' 500' 1000' 1500'



### LEGEND

- Project Boundary (dashed red line)
- Fallow Orchard (light brown)
- Non-Native Grasslands (orange)
- Central Coast Live Oak Riparian Woodland (green)

Figure 4.I-1

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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This community provides resources for a variety of mammals, birds, reptiles, and amphibians. These resources include nesting and foraging habitat, as well as resting, thermal, and escape cover. Species expected to occur in this community include coyote, mule deer, raccoon, wood rat (*Neotoma fuscipes*), Virginia opossum (*Didelphis virginiana*), wrentit (*Chamaea fasciata*), northern flicker (*Colaptes auratus*), great horned owl (*Bubo virginianus*), red-shouldered hawk (*Buteo lineatus*), common garter snake (*Thamnophis sirtalis*), Pacific tree frog (*Pseudacris regilla*), and western fence lizard.

Healthy riparian areas are important for wildlife because they provide a rich variety of cover, as well as foraging and nesting habitat. Surface water is a source of drinking water for many species. The high relative humidity around aquatic vegetation and the presence of deciduous trees can support abundant insects and other invertebrates, providing an important food source for many species.

### ***Laguna Creek Riparian Aquatic Habitat***

Laguna Creek and two tributary channels in the MCSP area are perennial streams with incised steep sided banks and narrow active channels characterized by a series of pools, riffles, gravel bars, and woody debris and roots. These perennial streams total approximately 4,700 linear feet and support approximately 16.8 acres of associated central coast live oak riparian woodland. Pools are generally 1-3 feet deep, and many are situated along undercut banks with overhanging root systems. Overstory canopy shade is mostly continuous provided by central coast live oak riparian woodland tree species. Small patches of herbaceous wetland and riparian vegetation, such as tules (*Scirpus* sp.), rush (*Juncus* sp.), nutsedge (*Cyperus esculentus*), mint (*Mentha* sp.), horsetail (*Equisetum hymenale*), and dock (*Rumex* sp.), occur on gravel bars in the channel below the ordinary high water mark.

An approximately 700-foot long ephemeral channel drains the northwestern portion of the MCSP area and adjacent residential neighborhood on Danefield Place. This channel transects a portion of fallow orchard with a non-native annual grassland understory. A sparse, highly degraded cover of native trees and shrubs—including poison oak, coyote brush, and coast live oak—is colonizing the area adjacent to the channel.

These ephemeral and perennial stream channels have defined bed and bank and are considered other waters of the U.S. Protocol-level wetland delineation has not been conducted to determine the extent of jurisdictional area, but will be required prior to any project-specific action that may affect one of these channels.

### **Special-Status Biological Resources**

#### ***Special-Status Natural Communities***

Special-status natural communities are defined as those that are rare in the region, support special-status plant or wildlife species, receive federal, state, or local

regulatory protection (e.g., §404 and 401 of the Clean Water Act, §1600 et seq. of the California Department of Fish and Game (CDFG) Code, and/or the Porter-Cologne Act, Town of Moraga General Plan), or designated as rare by the California Natural Diversity Data Base (CNDDB). Special-status natural communities present in the MCSP area are central coast live oak riparian woodlands and aquatic habitats associated with Laguna Creek.

### ***Special-status Species***

Moraga's diverse plant communities support several "special-status species" that may occur in the MCSP area due to the habitats present on undeveloped lands. Special-status species meet any of the following criteria:

- Plants and animals listed or proposed for listing under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- Plants designated as, or meet the criteria of, endangered, threatened, or rare under the California Native Plant Protection Act (CNPPA);
- Plants listed as 1A, 1B, 2, 3, or 4 in the California Native Plant Society's (CNPS') *Inventory of Rare and Endangered Vascular Plants of California*;
- Plants and animals that meet the criteria for being considered endangered or rare under the California Environmental Quality Act (CEQA);
- Animals designated as species of special concern by the U.S. Fish and Wildlife Service (USFWS) or CDFG; and
- Animals listed as "fully protected" in CDFG Code (Sections 3511, 4700, 5050 and 5515).

Most available habitats have been disturbed by past or ongoing land management actions, and the plan area is located in the middle of a developed area with poor connectivity to adjacent higher-quality habitats areas. Consequently, the MCSP area is characterized by low quality wildlife habitats, especially for species that are sensitive to human disturbance, habitat edges, or that require natural movement corridors.

Table 4.I-1 lists special-status plant and animal species identified as potentially occurring in the MCSP area. These species were identified through a review of a USFWS Species List for the MCSP area and vicinity, and a search of the CNDDB and CNPS Inventory of Rare and Endangered Vascular Plants of California. Federally-listed species with potential habitat in the MCSP area include California red-legged frog and the Alameda whipsnake. Other species with no known historic occurrence and no suitable habitat within the MCSP area are not presented in Table 4.I-1

### Special Status Plants

A total of 11 special-status plant species have potential to occur in the Project area based on their geographical ranges and the general habitat types present. One special-status plant, northern California black walnut, was observed during a biological assessment at Moraga Ranch in 2003 (Sycamore 2003). No state or federally listed plant species are expected to occur in the MCSP area due to the highly disturbed nature of most habitat types. All rare plants with potential to occur are associated with the central coast live oak riparian woodland habitat along Laguna Creek and its tributaries.

**Table 4.I-1**

#### Special-Status Species Potentially Affected in the MCSP Area

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
<b>Plant Species</b>				
Northern California black walnut	<i>Juglans californica</i> var. <i>hindsii</i>	-/CNPS 1B	Riparian forests and woodlands; observed at Moraga Ranch; in central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed during construction of stream crossings or renovation of Moraga Ranch.
Woodland madia	<i>Anisocarpus madioides</i>	-/-	May occur within central coast live oak riparian woodland.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
California pipevine	<i>Aristolochia californica</i>	-/-	Observed in central coast live oak riparian woodland along Laguna Creek; potential to occur in fallow orchards.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed during construction of stream crossings.
Pine grass	<i>Calamagrostis rubescens</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
Foothill sedge	<i>Carex tumulicola</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.

**Table 4.I-1**

## Special-Status Species Potentially Affected in the MCSP Area

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
Hairy bird's-beak	<i>Cordylanthus pilosus</i> ssp. <i>pilosus</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
Royal rein-orchid	<i>Piperia transversa</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
California shield fern	<i>Polystichum californicum</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
Valley oak	<i>Quercus lobata</i>	-/-	Individuals occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
Mt. Diablo annual lupine	<i>Lupinus pachylobus</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek, fallow orchards, and non-native annual grasslands.	Most suitable along Laguna Creek will be retained in its existing natural, undeveloped state; may be affected if removed to construct stream crossings.
Willow dock	<i>Rumex salicifolius</i> ssp. <i>salicifolius</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings.
<b>Wildlife</b>				
<i>Invertebrates</i>				
Bridges' Coast Range shoulderband snail	<i>Helminthoglypta nickliniana bridgesi</i>	-/-	May occur within central coast live oak riparian woodland along Laguna Creek and in fallow orchards.	Suitable habitat along Laguna Creek will remain undeveloped; may be affected if removed to construct stream crossings or development in fallow orchards.

**Table 4.I-1**

## Special-Status Species Potentially Affected in the MCSP Area

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
<i>Amphibians</i>				
California red-legged frog	<i>Rana aurora draytonii</i>	T/CSC	Suitable breeding, foraging, overwintering and dispersal habitat occur in Project area along Laguna Creek	Moderate probability of occurring in MCSP area along Laguna Creek and its tributaries; may be affected by construction of stream crossings.
<i>Reptiles</i>				
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	T/T	Low quality, isolated dispersal habitat occurs in non-native annual grasslands south of Moraga Road. Unlikely to occur due to lack of preferred habitat onsite or connectivity to preferred habitat types.	Not likely to occur in MCSP area or be affected by project-specific actions due to low quality habitats and lack of connectivity to preferred habitat types and reported occurrences in the vicinity.
Western pond turtle	<i>Clemmys marmorata</i>	-/CSC	Marginal aquatic habitat occurs in Laguna Creek. The MCSP area is disjunct from other suitable habitat areas.	Not likely to occur in MCSP area or be affected by project-specific actions due to low quality habitats and lack of connectivity to preferred habitat types.
<i>Birds</i>				
Cooper's hawk	<i>Accipiter cooperii</i>	-/CSC	Suitable nesting habitat present in central coast live oak riparian woodland	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction
California yellow warbler	<i>Dendroica petechia brewsteri</i>	BCC/CSC	Suitable nesting habitat present in central coast live oak riparian woodland,	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover;

**Table 4.I-1**

## Special-Status Species Potentially Affected in the MCSP Area

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
			foraging habitat in fallow orchards and grasslands	potential direct impacts if nesting site removed during stream crossing construction
White-tailed kite	<i>Elanus leucurus</i>	-/CFP	Suitable nesting habitat present in central coast live oak riparian woodland, foraging habitat in fallow orchards and grasslands	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction
Yellow breasted chat	<i>Icteria virens</i>	-/CSC	Suitable nesting habitat present in central coast live oak riparian woodland	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction
Allen's hummingbird	<i>Selasphorus sasin</i>	FSC/-	A summer resident; breeders are most common in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats. Suitable habitat occurs in central coast live oak riparian woodland along Laguna Creek	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction
Loggerhead shrike	<i>Lanius ludovicianus</i>	BCC/CSC	Suitable nesting habitat present in central coast live oak riparian woodland along Laguna Creek	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction

Table 4.I-1

## Special-Status Species Potentially Affected in the MCSP Area

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
<i>Mammals</i>				
Pallid bat	<i>Antrozous pallidus</i>	-/CSC WBWG High Priority	Suitable roosting habitat present in central coast live oak riparian woodland along Laguna Creek and old buildings at Moraga Ranch	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction or restoration or removal of old ranch buildings
Long-eared bat	<i>Myotis evotis</i>	-/ WBWG Medium Priority	Suitable roosting habitat present in central coast live oak riparian woodland along Laguna Creek and old buildings at Moraga Ranch	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction or restoration or removal of old ranch buildings
Fringed myotis bat	<i>Myotis thysanodes</i>	-/ WBWG High Priority	Suitable roosting habitat present in central coast live oak riparian woodland along Laguna Creek and old buildings at Moraga Ranch	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction or restoration or removal of old ranch buildings
Yuma myotis bat	<i>Myotis yumanensis</i>	-/ WBWG Low-Medium Priority	Suitable roosting habitat present in central coast live oak riparian woodland along Laguna Creek and old buildings at Moraga Ranch	Temporary disturbance due to construction noise; long-term degradation of nesting habitat due to noise, light and glare, and loss of tree cover; potential direct impacts if nesting site removed during stream crossing construction or restoration or removal of old ranch buildings
Listing Status: - = No status T = Threatened E = Endangered				

**Table 4.I-1****Special-Status Species Potentially Affected in the MCSP Area**

Common Name	Scientific Name	Status Fed./State	Habitat and Occurrence Information	Potential Effect by Development under the MCSP
BGEPA = Bald and Golden Eagle Protection Act BCC = USFWS Birds of Conservation Concern (USFWS 2002) CSC = California Species of Special Concern WBWG = Western Bat Working Group CFP = California Fully Protected under State Fish and Game Code California Department of Fish and Game. 2008. California Natural Diversity Data Base. <a href="http://imaps.dfg.ca.gov/viewers/cnddb_quickviewer/app.asp">http://imaps.dfg.ca.gov/viewers/cnddb_quickviewer/app.asp</a> . Accessed April 7, 2008. Element Occurrences on Oakland East, Briones Valley, Las Trampas Ridge, and Walnut Creek USGS 7.5' Topographic Quadrangles. No critical habitat as shown on The USFWS Critical Habitat Portal. <a href="http://crithab.fws.gov/">http://crithab.fws.gov/</a>				

**Federally or State Listed Threatened or Endangered Species*****Amphibians******California Red-Legged Frog***

California red-legged frog (CRLF) is federally listed as threatened under the FESA and a species of special concern by the CDFG. Found primarily in slow moving streams and ponds west of the Sierra Nevada crest below 4,500 feet, Contra Costa and Alameda counties contain most known CRLF occurrences in the Bay Area.

CRLF is reported to occur in aquatic habitat features, including streams, seeps, and ponds in the vicinity of Moraga, and Laguna Creek and tributary channels provide suitable habitat for the species. Dense overhanging vegetation, downed limbs, and undercut banks with exposed roots provide excellent aestivation habitat. Forested, moist banks along the stream provide suitable refugia habitat. Culverts under existing roadways allow for dispersal between recorded observations in the vicinity of Moraga and the MCSP area.

***Reptiles******Alameda Whipsnake***

Alameda whipsnake (AWS) is listed as threatened under both the FESA and CESA, and Critical Habitat was designated in 2006 (USFWS 2006). AWS is a fast moving, diurnal snake, 3-5 feet in length and is endemic to Alameda and Contra Costa counties, especially with coastal scrub and chaparral. This habitat association may also reflect this subspecies' preference for friable, well-drained soils. Critical habitat is located in undeveloped hillsides approximately ¼ mile to

the southwest of the MCSP area and ½ mile to the east, and there are 13 reported observations of AWS within 5 miles.

Habitats for AWS include east, southeast, south, and southwest facing slopes supporting coastal scrub and chaparral with open canopy cover, and with rock outcrops within ½ mile. AWS typically requires scrub communities, and annual grasslands and oak woodlands contiguous with scrub habitats. Primary constituent elements may also include grasslands and various oak woodlands that are linked to scrub habitats by substantial rock outcrops or river corridors. Overnight retreats and hibernacula for AWS include small mammal burrows created by deer mice and California voles, as well as soil crevices, brush piles, woodpiles, and debris. AWS preys mostly on western fence lizard, as well as other lizards, rodents, birds, and other snakes. AWS generally emerge mid-April, and hatchlings emerge August through November.

Potentially suitable AWS habitat in the MCSP area is marginal due to the lack of scrub or chaparral vegetation and rock outcrops, and because it is largely disconnected from adjacent habitat areas with reported occurrences. The MCSP area is unlikely to support a breeding population of AWS due to low quality habitats. Individual snakes are unlikely to disperse into the area due to lack of movement corridors between the MCSP area and suitable habitats in the vicinity.

## **Other Special-Status Wildlife**

### ***Invertebrates***

#### ***Bridges' Coast Range Shoulderband Snail***

Bridges' Coast Range shoulderband snail (BCRSS), one of over 200 native species of land snails in California, has been observed in Moraga (Sycamore 2003b). BCRSS is considered rare under the CNDDB ranking codes and “data deficient,” as little is known about its specific habitat requirements, taxonomic status, and historic range. While it is important under CEQA to identify potential impacts to such species, this subspecies does not receive legal protection either under state or federal law.

The BCRSS inhabits open hillsides and is typically found in non-native grasslands under debris, vegetation, and decomposing organic matter. Known from Contra Costa and Alameda Counties, BCRSS has been recorded from open hillsides, fallow pastures, under tall grass and weeds, among rock piles, and in woody debris in riparian oak woodland. Suitable habitat is available in the grasslands, fallow orchards, and central coast live oak riparian woodland in the MCSP area. The BCRSS is considered to have a high potential for occurrence.

### ***Vertebrate Bird and Mammal Species***

Several special-status bird and mammal species (bats) have potential to nest and roost in the central coast live oak riparian woodland along Laguna Creek. Bat

species may find suitable roosting habitats in older structures within Moraga Ranch. Forested areas provide cover and structure for roosts and nests, and are adjacent to foraging habitats along the stream and in adjacent grasslands and fallow orchards. Focused surveys are required to determine if these species are present within the MCSP area. Project specific surveys are required to determine if any implementation project under the MCSP has potential to affect any of these species.

## **4.I-2 REGULATORY SETTING**

### **Federal Laws and Regulations**

#### ***Endangered Species Act***

The National Oceanographic and Atmospheric Administration Fisheries Division (NOAA Fisheries) and the USFWS regulate compliance with the Endangered Species Act of 1973 (FESA), which protects endangered and threatened animals and plants, and their habitats. Section 9 of the FESA prohibits the "take" of any fish or wildlife species listed under the FESA as endangered; take of species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. Take, as defined by the FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Incidental Take Permits are required under the FESA for any activity that could result in take of a threatened or endangered species by any entity.

Any federal agency proposing or authorizing an activity that could potentially jeopardize listed species or destroy or adversely modify designated critical habitat must initiate consultation with the USFWS or NOAA-fisheries pursuant to Section 7 of the FESA. Permits issued by federal agencies, such as a Clean Water Act (CWA) Section 404 permit from the United States Army Corps of Engineers (USACE), must be issued only if the proposed activity will not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation.

When no other federal permit or action is required, consultation with the USFWS under Section 10 and the preparation of a Habitat Conservation Plan (HCP) is the only alternative for obtaining an Incidental Take Permit. The HCP must describe impacts likely to result from the take and identify steps to monitor, minimize, and mitigate these impacts, among other requirements.

Prior to implementation of any project specific action under the MCSP that has potential to affect the bed, bank or stream flow in Laguna Creek or the associated central coast live oak riparian woodland, the USACE will likely need to initiate consultation with the USFWS regarding incidental take of individuals or habitat for CRLF and AWS.

### ***Migratory Bird Treaty Act***

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA, 16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989). Under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Bird species covered under the MBTA are summarized in List of Migratory Birds (Title 50 of the Code of Federal Regulations, Section 10.13, <http://www.fws.gov/migratorybirds/intrnltr/mbta/mbtandx.html>.) Certain other migratory birds receive protection under the Bald and Golden Eagle Protection Act, and sections 3503, 3503.5, and 3800 of the California Fish and Game Code.

## **State Regulations and Laws**

### ***California Endangered Species Act***

The California Endangered Species Act (CESA) states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. CDFG will work with all interested persons, agencies and organizations to protect and preserve such sensitive resources and their habitats.

CESA allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop mitigation minimize or offset losses of listed species or their habitats. Prior to implementation of any project-level action under the MCSP that has potential to affect the bed, bank or stream flow in Laguna Creek or the associated central coast live oak riparian woodland, the Project Applicant will need to consult with the UCDFG regarding incidental take of individuals or habitat for AWS.

### ***Streambed Alteration Agreement***

CDFG exercises jurisdiction over wetland and riparian resources associated with streams and lakes under California Fish and Game Code Section 1602. CDFG has authority to regulate work that would divert, obstruct, or change the natural flow of a river, stream, or lake; change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. The jurisdictional area along a stream is usually bounded by the top-of-bank or the outermost edges of riparian vegetation. Any action that may affect the bed and bank of a stream, lake, or wetland, or remove riparian or aquatic habitat, may require a Sec. 1602 Lake or Streambed Alteration Agreement (LSAA).

Prior to undertaking any project-specific activity that may affect the bed and bank and associated habitats of Laguna Creek or its tributaries, a LSAA must be

obtained from CDFG. Applications require a Project description, a biological assessment of the Project site, analyses of direct, indirect, and cumulative impacts, a technically-defensible biological mitigation and monitoring plan, a documented history of Project alternatives, and efforts to avoid and minimize impacts, a relevant CEQA document, and a Notice of Determination that demonstrates the Project has complied with CEQA. CDFG has authority to reopen CEQA if impacts to resources over which it has jurisdiction have not been adequately addressed.

CDFG typically requires the establishment of a buffer zone adjacent to streams, ponds, wetlands, and riparian habitat. Depending upon the specific project components, habitat conditions, site context or the presence of federally state-listed species, appropriate riparian buffer zones may vary from 10 feet to 300 feet. During the LSAA permitting process, a Project Applicant would consult with CDFG to develop impact avoidance, minimization, and mitigation measures for special-status species that may be affected by the project.

### ***California Native Plant Protection Act***

CDFG regulates impacts to rare, threatened, or endangered plants species under the authority of the CNPPA (Sec. 1900-1913 of the State Fish and Game Code). Generally, and CNPS List 1B and List 2 species meet the criteria for consideration, and most List 3 and List 4 species are also considered sufficiently rare to warrant regulation. Several locally rare or unusual plant species may occur in the MCSP area that may meet the requirements for consideration under the CNPPA. Project applicants must consult with CDFG to develop appropriate impact avoidance, minimization, and mitigation measures prior to project-specific actions that may result in incidental take of plant species protected under CNPPA.

### ***California State Fish and Game Code***

CDFG has jurisdiction over species of special concern (CDFG 2006), a designation given to wildlife species whose breeding populations are in decline, and for plant species whose habitats are seriously threatened. Many plant and animal species, as well as habitats, receive protection under CDFG Code sections 3503, 3503.5, and 3800. Project applicants must consult with CDFG to develop appropriate impact avoidance, minimization, and mitigation measures prior to project-specific actions that may result in incidental take of wildlife species protected under CDFG Code.

### **Town of Moraga Goals, Objectives and Policies**

The Town of Moraga 2002 General Plan includes several goals and policies related to the conservation or preservation of biological resources. These policies include OS2.1 – 2.3, and OS2.5-2.9. Table 4.1-5 in Section 4.I-3 below describes these policies and analyzes consistency with the Project and alternatives.

## Evaluation Criteria

Table 4.I-2 presents criteria for analysis of biological resource impacts.

**Table 4.I-2**

### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.I-1. Will the Project cause a loss of individuals or habitat of endangered, threatened, or rare wildlife species? <sup>1</sup>	Number of individuals or acres of occupied or Critical Habitat lost	Greater than 0 individuals, occupied habitat, or Critical Habitat	CEQA Checklist IV (a); FESA, CESA (Sections 2062 and 2067); CEQA (Article 5, Section 15065)
4.I-2. Will the Project cause a loss of rare plant species?	Number of plant species or populations lost	More than 10% of known occurrences or populations in the project area and region	CEQA Checklist IV (a); CNPPA (CDFG Code Sections 1900-1913); CEQA (Article 5, Section 15065)
4.I-3. Will the Project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites? <sup>2</sup>	Number of active nesting or breeding sites	Greater than 0 active breeding sites removed	CEQA Checklist IV (d); MBTA, CDFG Wildlife Habitat Relationships model - (Version 5.2); Fish and Game Code Section 3503.5, Moraga General Plan Policies OS2.1-2.3, 2.8, and 2.9
4.I-4. Will the Project cause a permanent loss of natural vegetation or habitat for sensitive wildlife species? <sup>2</sup>	Acres of natural vegetation or sensitive wildlife habitat lost	Greater than 10% of each habitat type in the Project area	CEQA Checklist IV (a, d); CEQA (Article 5, Section 15065); CDFG Wildlife Habitat Relationships model - (Version 5.2); Moraga General Plan Policies OS2.1-2.3, 2.5, 2.8, and 2.9
4.I-5. Will the Project cause a permanent loss of sensitive native plant communities? <sup>3</sup>	Acres of sensitive native plant community lost	Net loss of sensitive native plant community	CEQA Checklist IV (b); CEQA (Article 5, Section 15065); CDFG (Fish and Game Code, Sections 1900-1913); CDFG Interim Wildlife/ Hardwood Management Guidelines (Feb. 1, 1989); CDFG (CNDDDB 2007); Moraga General Plan Policies OS2.1-2.3, 2.8, and 2.9

**Table 4.I-2**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.I-6. Will the Project result in a substantial loss of native vegetation or wildlife populations?	Proportion of habitat or population affected	Local viability of species or habitat threatened	CEQA Checklist IV (d); Moraga General Plan Policies OS2.1-2.3, 2.5, 2.8, and 2.9
4.I-7. Will the Project substantially block or disrupt wildlife migration or travel corridors? <sup>4</sup>	Number of corridors substantially blocked or disrupted	Greater than 0 corridors blocked to key species	CEQA Checklist IV (d); Moraga General Plan Policy OS2.5
4.I-8 Will the Project conflict with local policies or ordinances for the protection of biological resources?	Number of policies under which a conflict would result	Conflicts with greater than 0 policy	CEQA Checklist IV (f); Moraga Tree Ordinance; Moraga General Plan Policies OS2.1-2.3, 2.5, 2.8, and 2.9
4.I-9. Will the Project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?	Number of plans under which a conflict would result	Conflicts with greater than 0 plan	CEQA Checklist IV (f) and IX(c)
4.I-10. Will the Project result in a net loss of wetlands, streams or other waters of the U.S.?	Acreage or volume of excavation or fill in wetlands, streams or other waters of the U.S.	Net loss of wetlands, streams or other waters of the U.S.	CEQA Checklist IV (b-c); Clean Water Act, 40 CFR 230 Section 404(b)(1); federal and state no net loss policies; Moraga General Plan Policies OS2.2 and 2.3.

Notes:

**CDFG California Department of Fish and Game**

1. *Endangered, threatened, or rare is defined here as: state or federally listed endangered, threatened, or proposed plant or wildlife species; and CNPS List 1B, 2, 3, or 4 plant species.*

**CEQA California Environmental Quality Act**

2. *Sensitive terrestrial wildlife are defined here as: wildlife designated as “species of special concern” by the CDFG or USFWS; wildlife listed as “fully protected” in California; or wildlife species or communities that are not endangered, threatened, or rare, but which are considered to be a quality example or unique species within the County or region.*

**CESA California Endangered Species Act**

3. *Sensitive native terrestrial plant community is defined here as: any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS; or a plant community that is considered to be a quality example characteristic of or unique to the County or region.*

**CNDB California Natural Diversity Data Base**

4. *A migration corridor is defined as any habitat that experiences recurrent wildlife movement for a given species or population and that is essential to dispersal or completion of their life cycle.*

**FESA Federal**  
**Endangered Species**  
**Act**

**USFWS United States**  
**Fish and Wildlife**  
**Service**

### 4.I-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.I-3 presents potential biological resource impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for biological resource conflicts is determined by the location of the project in proximity to protected species and habitat and the type of disturbance that would occur in relation to federal and state laws and regulations, and Town of Moraga policies and ordinances, protecting such resources.

**Table 4.I-3**

#### Biological Resource Impacts –All Alternatives

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact<sup>1</sup></b>	<b>Level of Significance<sup>2</sup></b>
4.I-1. Will the Project cause a loss of individuals or habitat of endangered, threatened, or rare wildlife species? <sup>1</sup>	Greater than 0 individuals, occupied habitat, or Critical Habitat	P	Proposed Project ⊖ Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.I-2. Will the Project cause a loss of rare plant species?	More than 10% of known occurrences or populations in the project area and region	P	Proposed Project ⊖ Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.I-3. Will the Project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites? <sup>2</sup>	Greater than 0 active breeding sites removed	C	Proposed Project ⊖ Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖

**Table 4.I-3**

## Biological Resource Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance <sup>2</sup>
			Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>
4.I-4. Will the Project cause a permanent loss of natural vegetation or habitat for sensitive wildlife species? <sup>2</sup>	Greater than 10% of each habitat type in the Project area	P	Proposed Project <input checked="" type="radio"/> Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) <input checked="" type="radio"/> Alternative 3 (400 Unit Alternative) <input checked="" type="radio"/> Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>
4.I-5. Will the Project cause a permanent loss of sensitive native plant communities? <sup>3</sup>	Net loss of sensitive native plant community	P	Proposed Project <input checked="" type="radio"/> Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) <input checked="" type="radio"/> Alternative 3 (400 Unit Alternative) <input checked="" type="radio"/> Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>
4.I-6. Will the Project result in a substantial loss of native vegetation or wildlife populations?	Local viability of species or habitat threatened	P	Proposed Project <input checked="" type="radio"/> Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) <input checked="" type="radio"/> Alternative 3 (400 Unit Alternative) <input checked="" type="radio"/> Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>
4.I-7. Will the Project substantially block or disrupt wildlife migration or travel corridors? <sup>4</sup>	Greater than 0 corridors blocked to key species	P	Proposed Project <input checked="" type="radio"/> Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) <input checked="" type="radio"/> Alternative 3 (400 Unit Alternative) <input checked="" type="radio"/> Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>
4.I-8 Will the Project conflict with local policies or ordinances for the protection of biological resources?	Conflicts with greater than 0 policy	P	Proposed Project <input checked="" type="radio"/> Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) <input checked="" type="radio"/> Alternative 3 (400 Unit Alternative) <input checked="" type="radio"/> Alternative 4 (560 Unit Alternative) <input checked="" type="radio"/>

**Table 4.I-3****Biological Resource Impacts –All Alternatives**

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact<sup>1</sup></b>	<b>Level of Significance<sup>2</sup></b>
4.I-9. Will the Project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?	Conflicts with greater than 0 plan	P	Proposed Project == Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==
4.I-10. Will the Project result in a net loss of wetlands, streams or other waters of the U.S.?	Net loss of wetlands, streams or other waters of the U.S.	P	Proposed Project ◎ Alternative 1 (No Project – Existing Conditions) == Alternative 2 (339 Unit Alternative – GP Development Level) ◎ Alternative 3 (400 Unit Alternative) ◎ Alternative 4 (560 Unit Alternative) ◎

Source: HBA 2008

Notes: 1. Type of Impact:  
 C Construction

2. Level of Significance:  
 ● Significant impact before and after mitigation

P Permanent

◎ Significant impact before mitigation; less than significant impact after mitigation  
 ○ Less than significant impact; no mitigation proposed  
 == No impact

**Impact:** **4.I-1. Will the Project cause a loss of individuals or habitat of endangered, threatened, or rare wildlife species?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and therefore will have no effect on individuals or habitat of endangered, threatened, or rare wildlife species. No mitigation is required.

**Analysis:** *Potentially Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and all Action Alternatives include new road and pedestrian crossings of Laguna Creek and its tributaries. Bridge and culvert construction will affect aquatic and riparian habitats, and will

remove native trees within the central coast live oak riparian woodland. Construction-related and permanent impacts may occur to habitat for the federally-listed California red-legged frog, raptor nests protected under CDFG Code, bird species protected under the MBTA, and special-status bats. Development-related impacts to streams and associated riparian habitat will require a Sec. 404 permit from the USACE and a Sec. 1600 LSAA with the CDFG. This is considered a potentially significant impact. Mitigation Measure 4.I-1 will reduce this impact to a less than significant level.

**Mitigation:** **4.I-1: Implement General Plan EIR Mitigation 4.H-1: Site specific surveys and consultation with CDFG and USFWS.**

Site-specific surveys shall be conducted prior to development within the project area to determine the presence or absence of individuals and/or occupied or designated critical habitat of endangered, threatened, or rare wildlife or plant species. Prior to conducting these surveys a current listing of rare, threatened, and endangered species that may occur in the project area will be obtained. This will insure that the sensitive species list is kept current and that the proper species are searched for.

The Town of Moraga will work in conjunction with CDFG and USFWS to develop measures to prevent the loss of individuals and occupied or designated critical habitat. Mitigation measures may also be developed with these agencies when complete avoidance is not feasible. Examples of potential mitigation measures include protection of habitat by means of restoration, conservation, and permanent protection, and transplantation of plants from development sites to protected areas. All projects that may impact a rare, threatened, or endangered species will be subject to requirements imposed by CESA, FESA, or both.

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and Action Alternatives*

Conducting focused biological surveys for special-status wildlife species occurrences and habitats, developing project-specific designs to avoid or minimize impacts to the extent feasible, obtaining appropriate permits from the USACE, USFWS and CDFG and implementing mitigation measures required under those permits will result in a less than significant impact on special-status wildlife species, and no additional mitigation is required.

**Impact:** **4.I-2. Will the Project cause a loss of rare plant species?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on rare plant species. No mitigation is required.

**Analysis:** *Potentially Significant Impact; Proposed Project and All Action Alternatives*

All rare plant species with potential to occur in the MCSP area are associated with the central coast live oak riparian woodland community along Laguna Creek and its tributaries. The Proposed Project and all Action Alternatives include new road and pedestrian crossings of Laguna Creek and its tributaries, and a recreation trail parallel to portions of Laguna Creek. Permanent impacts may occur to rare plant populations if located within construction footprints for bridges, culverts, and recreation trails. This is considered a potentially significant impact. Mitigation Measure 4.I-1 (above) will reduce this potentially significant impact to a less than significant level.

**Mitigation:** **4.I-1: Implement General Plan EIR Mitigation 4.H-1: Site specific surveys and consultation with CDFG and USFWS (described above).**

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Conducting focused biological surveys for rare plants, developing project-specific designs to avoid or minimize impacts to any occurring rare plants to the extent feasible, obtaining a LSAA with CDFG, and implementing mitigation measures required under the LSAA will result in a less than significant impact on rare plants, and no additional mitigation is required.

**Impact:** **4.I-3. Will the Project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on active raptor nests, migratory bird nests, or native wildlife nursery sites. No mitigation is required.

**Analysis:** *Potentially Significant Impact; Proposed Project and All Action Alternatives*

Nesting and roosting habitat for special-status bird species and bats occurs in the central coast live oak riparian woodlands and fallow orchards. Older buildings at Moraga Ranch may provide roosting habitat for special-status bat species. The Proposed Project and all Action Alternatives include residential development in most of fallow orchard sites, and new road and pedestrian crossings of Laguna Creek and its tributaries, and renovations of buildings at Moraga Ranch. Residential and bridge construction will require removal of trees and shrubs that provide nesting and roosting habitat for special-status birds and bats, and building renovation may remove roost sites for bats. This is considered a

potentially significant impact. Mitigation Measure 4.I-3 will reduce this potentially significant impact to a less than significant level.

**Mitigation: 4.I-3: Implement General Plan Mitigation: 4.H-3: Conduct Pre-construction surveys for breeding raptors and migratory birds.**

Conduct pre-construction surveys for breeding raptors and migratory birds within development areas to determine if active nest sites exist on the site. If active nest sites are located, the project proponent shall consult with the CDFG to determine appropriate construction setbacks from the nest sites. No construction activities shall occur within the construction setback during the nesting season of the affected species.

**After**

**Mitigation: Less than Significant Impact; Proposed Project and All Action Alternatives**

Conducting focused biological surveys for special-status wildlife species, developing project-specific designs to avoid or minimize impacts to the extent feasible, obtaining appropriate permits from the USFWS and CDFG, and implementing required mitigation measures under those permits, will result in a less than significant impact on raptor nests, migratory birds protected under the MBTA, and wildlife nursery sites, and no additional mitigation is required.

**Impact: 4.I-4. Will the Project cause a permanent loss of natural vegetation or habitat for sensitive wildlife species?**

**Analysis: No Impact; Alternative 1 (No Project)**

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on natural vegetation or habitat for sensitive wildlife species. No mitigation is required.

**Analysis: Potentially Significant; Proposed Project and All Action Alternatives**

The loss of natural vegetation is limited to the area required for new stream crossings and recreation trails at Laguna Creek and its tributaries under the Proposed Project and all Action Alternatives. The majority of the 16.8-acre central coast live oak riparian woodland will remain in its undeveloped, natural state under the Proposed Project and all Action Alternatives. Table 4.I-4 below summarizes the amount of natural habitat removed under the full build-out of the Proposed Project and each Alternative. While the area of natural vegetation lost for stream crossings and recreation trails is considered less than significant, this vegetation type provides habitat for special-status wildlife species.

**Table 4.I-4**

Natural Habitats Removed Under Each Alternatives

	Non-Native Annual Grassland	Fallow Orchard	Central Coast Live Oak Riparian Woodland	Total
<b>Proposed Project 720 units</b>				
Removed	4.9	67.3	0	72.2
Unused	0	0	16.8*	16.8
<b>Alternative 1 - No Project</b>				
Removed	0	0	0	0.0
Unused	4.9	67.3	16.8	89.0
<b>Alternative 2 - 339 units</b>				
Removed	4.9	67.3	0	72.2
Unused	0	0	16.8*	16.8
<b>Alternative 3 - 400 units</b>				
Removed	4.9	37.3	0	42.2
Unused **	0	30	16.8*	46.8
<b>Alternative 4 - 560 units</b>				
Removed	4.9	52.3	0	57.2
Unused **	0	15	16.8*	31.8

\*Nominal amounts central coast live oak riparian woodland will be removed for the construction of bridges and culverts over Laguna Creek and its tributaries.

\*\* Acres of fallow orchard land that may not be used if residential units are clustered at proposed residential densities.

The Proposed Project and all Action Alternatives include residential development in most fallow orchard sites. Fallow orchards may provide nesting or roosting habitat for special-status bird and bat species protected under the MBTA or state CDFG Code, and older structures at Moraga Ranch may provide roosting habitat for bats. Residential construction will require removal of trees and shrubs that provide nesting and roosting habitat for special-status birds and bats, and building renovation may remove roost sites for bats. This is considered a potentially significant impact. Mitigation Measure 4.I-3 will reduce this potentially significant impact to a less than significant level.

**Mitigation:** **4.I-3: Implement General Plan Mitigation: 4.H-3: Conduct Pre-construction surveys for breeding raptors and migratory birds. (see above).**

**After**

**Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Conducting focused biological surveys for special-status wildlife species, developing project-specific designs to avoid or minimize impacts to the extent feasible in central coast live oak riparian woodland, obtaining the appropriate permits from the USFWS and CDFG, and implementing mitigation measures required under those permits will result in a less than significant impact on special-status wildlife species, and no additional mitigation is required.

**Impact:** **4.I-5. Will the Project cause a permanent loss of sensitive native plant communities?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on sensitive native plant communities. No mitigation is required.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Central coast live oak riparian woodland is considered a sensitive native plant community. While the central coast live oak riparian woodland will remain in its current undeveloped natural state under the Proposed Project and all Action Alternatives, minor amounts of vegetation will be permanently lost for the construction of new stream crossings and recreation trails. The small amount of vegetation removed to accommodate new bridges and trails is expected to be minor in relation to the extent of the habitat type that will remain undeveloped, and is considered less than significant. No mitigation is required.

**Mitigation:** No mitigation is required.

**Impact:** **4.I-6. Will the Project result in a substantial loss of native vegetation or wildlife populations?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on sensitive native plant communities. No mitigation is required.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Central coast live oak riparian woodland is the only native vegetation community in the MCSP area, and supports the most productive wildlife habitat in the project area. While the central coast live oak riparian

woodland will remain in its current undeveloped natural state under the Proposed Project and all Action Alternatives, minor amounts of vegetation will be permanently lost for the construction of new stream crossings and recreation trails. The small amount of vegetation and wildlife populations supported by this habitat that will be removed to accommodate new bridges and culverts is minor in relation to the extent of the habitat type that will remain undeveloped, and is considered less than significant. No mitigation is required.

**Mitigation:** No mitigation is required.

**Impact:** **4.I-7. Will the Project substantially block or disrupt wildlife migration or travel corridors?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on wildlife migration or travel corridors. No mitigation is required.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Central coast live oak riparian woodland along Laguna Creek and its tributaries provide a wildlife migration and travel corridor through the MCSP area. Located between other developed areas in the Town of Moraga, the MCSP area is largely isolated from other wildlife habitat areas with natural vegetation in the project vicinity. Consequently, the species that occur in the MCSP area are expected to be adapted or habituated to human presence and disturbed habitat types. While central coast live oak riparian woodland will remain undeveloped under the Proposed Project and all Action Alternatives, the habitat will have minor disturbances associated with new stream crossings and recreation trails. The construction of new bridges and culverts to provide stream crossings in the MCSP area are similar to existing bridges and culverts along Laguna Creek located on Moraga Way and Moraga Road. The existing wildlife movement corridor through the MCSP area is considered relatively disturbed and poor quality due to adjacent development. The project-related impact to the quality of the wildlife movement corridor is considered less than significant, and no mitigation is required.

**Mitigation:** No mitigation is required.

**Impact:** **4.I-8. Will the Project conflict with local policies or ordinances for the protection of biological resources?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing General Plan policies and no new construction or ground disturbance, and will have no effect on existing policies or ordinances. No mitigation is required.

**Analysis:** *Less than Significant; Proposed Project and All Action Alternatives*

The Project and all Action Alternatives are consistent with existing General Plan goals and policies related to the conservation and protection of natural resources. Table 4.I-5 below lists all relevant policies and describes how the Proposed Project and All Alternatives are consistent. This is considered a less than significant impacts and no mitigation is required.

**Table 4.I-5**

## Consistency Analysis with General Plan Policies

General Plan Policy	Consistency Determination
<u>Policy OS2.1: Protection of Wildlife Areas.</u> Prohibit development in locations where it would have a significantly adverse effect on wildlife areas. When development is permitted in the vicinity of wildlife areas, require implementation of appropriate mitigation measures to reduce any adverse impact upon the wildlife.	<u>Consistent.</u> The Project and all Action Alternatives will retain the most sensitive habitat type in the MCSP area - 16.8 acres of central coast live oak riparian woodland- in an undeveloped corridor along Laguna Creek. This habitat will have adequate buffers to retain native tree canopy and have minimal intrusions in the form of new road crossings or pedestrian trails. Poor quality and isolated habitats occur in the remainder of the MCSP area.
<u>Policy OS2.2: Preservation of Riparian Environments.</u> Preserve creeks, streams and other waterways in their natural state whenever possible.	<u>Consistent.</u> The Project and all Action Alternatives will retain in its current natural, undeveloped state the Laguna Creek riparian corridor, including the bed, bank, and associated riparian habitats. New road crossings will require permits and mitigation measures to restore affected stream banks and native habitats.
<u>Policy OS2.5: Wildlife Corridors.</u> To the extent possible, connect open space areas so that wildlife can have free movement through the area, bypass urban areas and have proper access to adjacent regional parks and related open space systems.	<u>Consistent.</u> The Project and all Action Alternatives will retain the most critical wildlife corridor in the MCSP area - 16.8 acres of central coast live oak riparian woodland- in its current natural, undeveloped state in a corridor along Laguna Creek. Although the MCSP area is largely isolated from surrounding natural areas, Laguna Creek and the associated woodland will retain a contiguous movement corridor for many riparian associated species.
<u>Policy OS2.6: Reintroduction of Wildlife Species.</u> Consider reintroduction into the natural environment of those species that could survive, would not be detrimental to the urban development, and which could be economically accomplished.	<u>Consistent.</u> Implementation of the Project and all Action Alternatives will require obtaining permits for new road crossings of Laguna Creek and will require habitat restoration to mitigate those impacts. Habitat restoration will enhance the suitability for wildlife species that may colonize the area. Direct reintroduction of wildlife species is not advised due to

**Table 4.I-5**

## Consistency Analysis with General Plan Policies

	its relative isolation from other habitats.
<u>Policy OS2.7: Reintroduction of Native Plant Species.</u> Consider reintroduction into the natural environment of plant species that are indigenous to the area and encourage programs to manage, reduce or eliminate the use and proliferation of non-native, invasive species. Encourage the use of native plant species in new landscaping plans.	<u>Consistent.</u> Implementation of the Project and all Action Alternatives will require obtaining permits for new road crossings of Laguna Creek and will require habitat restoration using indigenous plant species to mitigate those impacts. As part of habitat restoration, non-native invasive plant species may be removed or controlled. Landscaping plans developed for the MCSP area will encourage the use of locally native plants.
<u>Policy OS2.8: Tree Preservation.</u> Preserve and protect trees wherever they are located in the community as they contribute to the beauty and environmental quality of the Town.	<u>Consistent.</u> The Project and all Action Alternatives will retain in an undeveloped, natural state most native trees in the MCSP area in 16.8 acres of central coast live oak riparian woodland in a corridor along Laguna Creek. Other individual trees may be retained as feasible in the design and construction under any action alternative.
<u>Policy OS2.9: Tree-Covered Areas.</u> Preserve or substantially maintain in their present form certain tree-covered areas, especially with respect to their value as wildlife habitats, even if development in those areas is permitted. Give preference to the retention of original growth over replanting. These areas include, but are not limited to: <ul style="list-style-type: none"> <li>• Mulholland Hill (both northeast and southwest slopes)</li> <li>• Indian Ridge</li> <li>• Bollinger Canyon</li> <li>• Sanders Ranch properties</li> <li>• St. Mary's Road northeast of Bollinger Canyon Road</li> <li>• The "Black Forest" area located northerly of the terminus of Camino Ricardo</li> <li>• Coyote Gulch west of St. Mary's Road, to the north</li> <li>• Wooded area to the east and south of St. Mary's Gardens</li> <li>• Wooded area behind Donald Rheem School</li> <li>• Wooded area on the ridge south of Sanders Drive</li> </ul>	<u>Consistent.</u> The Project and all Action Alternatives will retain the only native tree covered portion of the MCSP area - 16.8 acres of central coast live oak riparian woodland- in an undeveloped corridor along Laguna Creek. Other individual trees may be retained as feasible during the design and construction under any action alternative.

**Mitigation:** No mitigation is required.

**Impact:** **4.I-9. Will the Project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

There are currently no adopted HCPs, NCCPs, or other habitat conservation plan within the MCSP area or vicinity. The Proposed Project and All Alternatives will have no affect on any existing or proposed habitat conservation plan.

**Mitigation:** No mitigation is required.

**Impact:** **4.I-10. Will the Project result in a net loss of wetlands, streams or other waters of the U.S.?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing conditions and no new construction or ground disturbance, and will have no effect on wetlands, streams, or other waters if the U.S. No mitigation is required.

**Analysis:** *Potentially Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and all Action Alternatives include new road and pedestrian crossings of Laguna Creek and its tributaries, and new recreation trails parallel to portions of Laguna Creek. Laguna Creek and its perennial tributaries have defined bed and bank and support associated riparian vegetation, and are considered jurisdictional other waters of the U.S. Approximately 4,700 linear feet of stream channel and 16.8 acres of associated riparian habitats occur in the project area. Under the Proposed Project and all Action Alternatives, a corridor along Laguna Creek, including the bed and bank of the creek and its tributaries and associated riparian habitats, will remain undeveloped and in its present natural condition. Impacts to the bed and bank of Laguna Creek and its perennial tributaries will be limited to bridges and culverts at new stream crossings, and recreation trails, under the Proposed Project and All Action Alternatives. This is considered a potentially significant impact.

An unnamed, approximately 700-foot long ephemeral drainage channel supporting sparse, highly degraded riparian vegetation occurs in a fallow orchard area below Danefield Place. The channel area is zoned residential in the Proposed Project and Alternative 2 (339 units), and zoned residential in Alternatives 3 and 4 (400 and 560 units, respectively). The entire ephemeral channel may be removed during build-out of the Proposed Project and Alternative 2 (339 units), and approximately half may be removed during build out of Alternatives 3 and 4 (400 and 560 units, respectively). This is considered a potentially significant impact.

**Mitigation: 4.I-10. Implement General Plan EIR Mitigation Measure 4.H-9: Protect Wetlands and Other Waters of the United States.**

The Town of Moraga shall require site specific surveys to determine if the project will impact a jurisdictional wetland or other waters of the U.S. Where impacts are found to occur, the project proponent will work in conjunction with the USACE (Sec. 404 permit) to establish a means of protecting, restoring, or replacing the wetland or waterway, such that a no net loss of wetland functions or values is achieved.

If required, the Project Applicant will also apply for a Sec. 401 permit with the SFBRWQCB and a LSAA with CDFG, and work in conjunction with these agencies to establish a means of protecting, restoring, or replacing the wetland or waterway, such that a no net loss of wetland functions or values is achieved.

**After****Mitigation: *Less than Significant; Proposed Project and All Action Alternatives***

Conducting a wetland delineation, design project-level actions to avoid or minimize impacts to jurisdictional areas, adherence to all permit conditions and implementation of all mitigation measures in the Sec. 404 permit and LSAA are expected to result in no net loss of stream or riparian area, habitats, function, or values.

**4.I-4 CUMULATIVE IMPACTS**

There are several Project impacts – either less than significant or potentially significant – identified in the Biological Resources section: build-out of the Proposed Project and All Action Alternatives includes constructing new stream crossings of Laguna Creek and its tributaries, and the construction of a new recreation trail. These features may adversely affect sensitive habitats for special-status species associated with the creek and central coast live oak riparian woodland. New residential construction in fallow orchards may remove nesting and roosting habitats for protected bird and bat species.

Cumulative impacts are defined under CEQA as “the change in the environment which results from the incremental impact of the Project when added to other closely related past, present, and reasonably foreseeable probable future impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” Cumulative impacts are the sum of all impacts that occur throughout the Project area or region, from this and other projects and include cumulative loss of habitat functions and values, habitat fragmentation, and loss of movement corridors.

An analysis of cumulative impacts was made by reviewing proposed and active development projects in the region. The sphere of influence for impact evaluation includes the limits of the Town of Moraga, the City of Lafayette south of Highway 24, and the City of Walnut Creek south of Highway 24 and west of Highway 680.

**Impact****4.I-1C. Cumulative Impacts to Biological Resources.****Analysis:***Potentially Significant, Proposed Project and All Action Alternatives*

Proposed or approved projects in the vicinity of the MCSP area include four residential subdivision developments - the Bollinger Valley Project (121 homes), Palos Colorados (123 homes), Rancho Laguna (35 homes), and Rheem Estates- and other residential development projects in the City of Lafayette. These projects include permanent preservation of substantial areas of open space, especially along ridgelines and riparian corridors. The open space areas are mostly connected to adjacent preserved lands, allowing for continuous habitat connections for species adapted to human disturbance or presence in the vicinity. The Bollinger Valley and Rancho Laguna projects are contiguous with extensive publicly-owned open space and natural habitat areas to the south.

Development in Contra Costa County has resulted in the loss of both agricultural and grazing lands, and has fragmented the remaining habitat areas. Build out of the Proposed Project will result in the loss of as much as 70.2 acres of non-native annual grassland and fallow orchard habitats, and the increasing fragmentation and isolation of riparian habitats associated with Laguna Creek and its tributaries. Due to its existing isolation and degraded state, this represents a relatively minor loss of natural habitat quantity and quality in the region, and does not create a significant adverse cumulative effect. The MCSP area is not an important local or regional wildlife corridor and development will have a minor cumulative effect on wildlife movement in the vicinity. As an urban infill project, the MCSP is not expected to result in a growth-inducing impact or create new demand for development of agricultural or open space properties in the region.

Construction under the Proposed Project and all Action Alternatives will result in the loss of nesting and roosting habitat as trees are removed for new stream crossings and fallow orchards are developed. County-wide, the reduction in nesting habitat and riparian vegetation represents a significant adverse effect on the environment. However, retaining the central coast live oak riparian woodland associated with tributaries to Laguna Creek in a natural, undeveloped state is expected to maintain this impact at a less than significant level when considered on a cumulative basis with other projects in the vicinity. If properly implemented, mitigation would result in no net loss in riparian habitat function and values and native woodlands, and no additional mitigation is required.

**Mitigation:**

No mitigation is required.

## **4.I-5 PREPARERS AND REFERENCES**

### **Preparers**

Trevor A. Burwell, Ph.D., Hauge Brueck Associates

### **Reviewers**

Garth Alling, Hauge Brueck Associates

### **References**

Sycamore Associates, LLC. 2003. Biological Assessment and Preliminary Jurisdictional Determination for the Moraga Ranch Property, Moraga, Contra Costa County, California. Report prepared by Sycamore Associates for David Bruzzone, February 17, 2003. Walnut Creek, CA.

## 4.J PUBLIC UTILITIES AND HAZARDOUS MATERIALS

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This section provides a basis for analyzing project impacts on service standards within the respective jurisdiction of the project (Town of Moraga and Contra Costa County) due to increased demands for solid waste disposal (including hazardous materials), water and wastewater (sewage) treatment and disposal, power and telephone.

### 4.J-1 ENVIRONMENTAL SETTING

#### Public Utilities

The Town of Moraga is served by a number of public utilities: East Bay Municipal Utility District (Water), Central Contra Costa Sanitary District (Wastewater), Central Contra Costa Solid Waste Authority, Allied Waste Industries and the Keller Canyon Landfill (Solid Waste), Pacific Gas and Electric (Gas and Electricity), SBC and AT&T (Communications). The existing conditions for each of the utilities are described in detail below.

##### ***East Bay Municipal Utility District***

East Bay Municipal Utility District (EBMUD) provides water and service for over 1.3 million people within Contra Costa and Alameda County. The MCSP site is located within the service area of EBMUD. Ninety percent of EBMUD's water source comes from the 577 square mile Mokelumne River watershed on the west slope of the Sierra Nevada. The remainder of the water supply comes from smaller East Bay watersheds. In addition to the 325 million gallons per day that EBMUD has entitlements to withdrawal from the Mokelumne River EBMUD also has entitlements to draw 185 million gallons per day (mgd) from the Sacramento River.

EBMUD collects runoff from local watersheds and stores the water in five reservoirs within its service area. These reservoirs yield 15-25 mgd during normal hydrologic years. In addition for use as storage, these reservoirs also regulate water from the aqueducts that are used to transport the water from the Mokelumne River watershed source. Totaling all the resources, available supply could exceed 400 million gallons per day. However, this available supply is likely much less due to increased loss of available water due to senior water right holder's withdrawal and decreased flows in the Mokelumne River.

Based on the Urban Water Management Plan drafted in 2005 (EBMUD 2005) demand in the year 2020 is projected to be 277 million gallons per day. This demand will likely decrease slightly due to increased conservation activities.

EBMUD water conveyed to the Town of Moraga is treated at the Orinda Filter Plant. The distribution, storage and treatment facilities serving the town of Moraga are sufficient for current population levels and meet the acceptable operating pressures as outlined by EBMUD.

### ***Central Contra Costa Sanitary District (CCCSD)***

Central Contra Costa Sanitary District (CCCSD) is the provider of sanitary sewer services for the Town of Moraga, including the MCSP area, as well as most of central Contra Costa County. Most of the wastewater generated in Moraga flows to and through the Moraga Pumping Station at School Street. The Town does not treat its own raw sewage; instead, it flows by pressure and gravity flows to the CCCSD regional treatment plant in unincorporated Martinez. The plant is permitted to discharge up to 53.8 million gallons per day (mgd) of average dry weather flow (ADWF) into Suisun Bay. In 2007, CCCSD's ADWF reached 36.1 (mgd) or 67 percent of its permitted discharge. CCCSD is not currently in violation of any discharge regulation and has not had problems meeting current discharge requirements.

CCCSD has indicated that the Moraga Pumping Station and the existing project area sewer systems have sufficient capacity to accommodate existing and currently planned flows. While the Moraga Pumping Station has undergone several renovations over the years, the two existing force mains that exit the Moraga Pump Station, are the original pipelines that were installed in 1961. Between the years 2013 and 2015, CCCSD plans to evaluate their condition, implement any needed rehabilitation, and may install a third force main to improve system reliability.

### ***Central Contra Costa Solid Waste Authority (CCCSWA)***

The Central Contra Costa Solid Waste Authority (CCCSWA) manages solid waste and recyclable materials generated within the Town of Moraga. CCCSWA implements the waste management program that includes solid waste and recycling services for both commercial and residential customers. CCCSWA has franchise agreements with Allied Waste Services for the collection, transfer and disposal of solid waste.

All solid waste is transported to the Contra Costa County Transfer and Recovery Station in Martinez by Allied Waste Services. The waste from this facility is then taken to the Keller Canyon Landfill, a Class II Landfill that accepts municipal solid waste. Keller Canyon Landfill is 2,600 acres and currently handles 2,500 tons of waste per day. The landfill is permitted for 3,500 tons of waste per day. Based on the current rate of disposal, the Keller Canyon Landfill has more than 65 years of remaining capacity.

Household hazardous waste is accepted at a CCCSD facility in Martinez.

***Pacific Gas and Electric***

Pacific Gas and Electric (PG&E) is the provider of electrical power and natural gas to the Town of Moraga. PG&E has electric transmission facilities within the Town of Moraga that will serve the project area.

***AT&T and Comcast***

AT&T and Comcast are the two communication utility providers for the Town of Moraga. AT&T provides telephone service while Comcast serves the Town of Moraga as a cable TV provider.

***Wild Fire***

Undeveloped grasslands and forested areas within the Town of Moraga may be susceptible to wildfire, especially in the dry months of summer. Residential areas adjacent to these undeveloped areas have increased chances that a wild fire would spread to the residential community.

**4.J-2 REGULATORY SETTING****Town of Moraga Goals, Objectives and Policies**

The Moraga 2002 General Plan has numerous goals, objectives and policies addressing public utilities and hazardous materials. The applicable goals, objectives and policies are listed below.

***Water Service***

The Town of Moraga General Plan contains goals and policies related to water service and conservation.

Goal OS3 of the General Plan states: “Protection of water resources through protection of underground water aquifers and recharge areas; maintenance of watercourses in their natural condition; and efficient water use.” In order to implement this Goal, Policy OS3.7 Water Conservation Measures states: “Encourage water conservation in new building construction and retrofits, through measures such as low-flow toilets and drought tolerant landscaping.” Policy OS3.8 Water Recycling states: “When and where feasible and appropriate, encourage the use of recycled water for landscape irrigation purposes.”

Goal GM1 of the General Plan states: Maintenance of approved Performance Standards for Town facilities, services and infrastructure. In order to implement this Goal, Policy GM1.5 states: “Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or

their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council. *Water.* The capacity to provide sufficient water to all residents and businesses in the Town as indicated by the East Bay Municipal Utility District.”

### **Sewer Service**

Policy GM1.5 states: “Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modifications to these standards may be accomplished by a resolution of the Town Council. *Sanitary Facilities.* The capacity to transport and treat residential and non-residential wastewater as indicated by the Central Contra Costa Sanitary District.”

### **Solid Waste**

The state of California passed the Integrated Waste Management Act in 1989 that required a 50 percent reduction in the amount of solid waste that was entering into landfills by the year 2000. The Town of Moraga achieved this goal by 1997. The town of Moraga adopted a Construction and Demolition Debris Recycling Ordinance to ensure compliance with the California Integrated Waste Management Act of 1989. The proposed project and alternatives will be subject to the provisions of this ordinance.

### **Hazards and Hazardous Materials**

The State of California Department of Toxic Substances Control (DTSC) assembles a list of all hazardous waste facilities and lands designated as hazardous waste properties per Section 65962.5 of the California Government Code. This list was accessed for use of this analysis online at <http://www.envirostor.dtsc.ca.gov/public/>

Resource Conservation and Recovery Act – The Resource Conservation and Recovery Act (RCRA) is a federal law that is enforced through the US Environmental Protection Agency (EPA). This law addresses hazardous waste generation, transportation, storage, treatment and disposal. The law requires hazardous waste manifests to track the movement and transfer of hazardous waste from its original location to its final destination for disposal.

California Code of Regulations – Title 22 of the California Code of Regulations (CCR), Division 4.5 regulates hazardous waste generators, transporters and treatment, storage and disposal facilities. It should be noted the DTSC regulates hazardous waste more stringently than the EPA.

If a release of a hazardous substance(s) is (are) detected, the Contra Costa County Fire Protection District will respond to evaluate conditions and determine if additional emergency services will be required. The local agency that regulates hazardous materials is the Certified Uniform Protection Agency that is a part of Contra Costa County Office of Health Services (CCCOHS). The CCCOHS enforces the relevant provisions of the CCR.

### **Wild Fire**

General Plan Policy PS3.12 states: "Hazardous Fire Areas. Apply special fire protection standards to all new developments in hillside, open space, and wild land interface areas. Fire prevention measures such as removal of dry grass and brush, landscaping with fire and drought-resistant vegetation, provision of adequate water supplies and access for fire-fighting vehicles shall be required to reduce the risk of wild land fires. All new structures located in hazardous fire areas shall be constructed with fire resistant exterior materials consistent with applicable building codes and standards."

### **Evaluation Criteria**

Table 4.J-1 presents criteria for analysis of public utilities and hazardous materials impacts.

**Table 4.J-1**

#### Evaluation Criteria with Points of Significance

<b>Evaluation Criteria</b>	<b>As Measured by</b>	<b>Point of Significance</b>	<b>Justification</b>
4.J-1. Will the Project increase demand for water, wastewater treatment and disposal, solid waste or hazardous waste disposal that accepted service standards are not maintained and/or new facilities are required to maintain acceptable service standards?	Ratio of service personnel or facilities to residential population or daytime users; Permitted capacity of landfill, wastewater treatment plant	Greater than 0 change in the ratio of services standard; Decrease in landfill or wastewater treatment plant lifetimes; Exceedance of service allocation or permitted levels of operation.	CEQA Checklist XVI(a-b, e-g); EBMUD existing water supply entitlements; SFRWQCB permitted levels of treated effluent quality and quantity; CIWMB permitted amounts of solid and hazardous wastes; Moraga General Plan Policies OS2.11, 3.1, and GM1.5
4.J-2. Will the Project create a significant hazard to the public or the environment through the routine transport, use, disposal of, or reasonably foreseeable upset and accidental release of	Quantity, type, frequency, and location of hazardous material use, handling and transport induced by the Project;	Routine transport, use, or disposal of hazardous materials	CEQA Checklist VII(a, b)

**Table 4.J-1**

## Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
hazardous materials?	Potential number of people or acres of habitat exposed		
4.J-3. Will the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ - mile of an existing or proposed school?	Quantity, type, frequency, and location of hazardous material use, handling and transport induced by the Project; Potential number of people exposed; Distance to school	Emission of hazardous materials within ¼ mile of a school	CEQA Checklist VII(c)
4.J-4. Will the Project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5, and, as a result, would it create a significant hazard to the public or the environment?	Quantity, type, frequency, and location of hazardous material use, handling and transport induced by the Project; Potential number of people or acres of habitat exposed	Any new structures or facilities located on a hazardous material site	CEQA Checklist VII(d); U.S. Government Code 65962.5
4.J-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	Structures and facilities adjacent to wildfire hazard areas	Any structure or facility located in substantial wild land fire hazard areas without maintained defensible space; Any structure built without fire safety provisions	CEQA Checklist VII(h); MOFD and CDF policies; Moraga General Plan Policy PS3.12

**4.J-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Table 4.J-2 presents potential public utilities and hazardous materials impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for the Proposed Project and all Alternatives. The potential for public utilities and hazardous materials conflicts is determined by the location of the project in proximity to utilities and hazards, current service levels and the project's potential for exposing the public to hazards.

**Table 4.J-2**

## Public Utilities and Hazardous Materials Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance
4.J-1. Will the Project increase demand for water, wastewater treatment and disposal, solid waste or hazardous waste disposal that accepted service standards are not maintained and/or new facilities are required to maintain acceptable service standards?	Greater than 0 change in the ratio of services standard; Decrease in landfill or wastewater treatment plant lifetimes; Exceedance of service allocation or permitted levels of operation	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.J-2. Will the Project create a significant hazard to the public or the environment through the routine transport, use, disposal of, or reasonably foreseeable upset and accidental release of hazardous materials?	Routine transport, use, or disposal of hazardous materials	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.J-3. Will the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ - mile of an existing or proposed school?	Emission of hazardous materials within ¼ mile of a school	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.J-4. Will the Project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5, and, as a result, would it create a significant hazard to the public or the environment?	Any new structures or facilities located on a hazardous material site	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==

**Table 4.J-2**

## Public Utilities and Hazardous Materials Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of Significance
4.J-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	Any structure or facility located in substantial wild land fire hazard areas without maintained defensible space; Any structure built without fire safety provisions	P	Proposed Project == Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) == Alternative 3 (400 Unit Alternative) == Alternative 4 (560 Unit Alternative) ==

Source: HBA 2008

Notes: 1. Type of Impact:

C	Construction	●	2. Level of Significance: Significant impact before and after mitigation
P	Permanent	◎	Significant impact before mitigation; less than significant impact after mitigation
		○	Less than significant impact; no mitigation proposed
		==	No impact

**Impact:** **4.J-1. Will the Project increase demand for water, wastewater treatment and disposal, solid waste or hazardous waste disposal that accepted service standards are not maintained and/or new facilities are required to maintain acceptable service standards?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not have an impact on demand for public utilities due to no construction of residential or commercial facilities. No change to existing land uses would be approved and therefore no change in the existing demand for water, wastewater treatment, and solid waste disposal or hazardous waste disposal would result.

**Analysis:** *Less than Significant; Proposed Project and All Action Alternatives*

The Proposed Project and all Action Alternatives will result in increased demand for utilities. The increase of residential units, retail and office space associated with the Proposed Project, Alternative 3 (400 units) and Alternative 4 (560 units) will result in a minor increase in demand for public utilities compared to Alternative 2 (339 units- General Plan buildout). Based on the analysis performed for 2002 General Plan EIR

each public utility that serves the Town of Moraga has sufficient capacity to serve the Proposed Project and all Action Alternatives.

### *Water Supply*

Water supply to the Town of Moraga is the responsibility of EBMUD. Water demands for Moraga have been calculated most recently by EBMUD in the Water Supply Management Plan (WSMP) for the year 2030 last updated in 2004. Based on their projections, EBMUD has designed and, in 2008, will be constructing improvements to the Lafayette Water Treatment Plant, and a new 24-inch diameter transmission pipeline in Moraga Road to enhance service to Moraga. Discussions with the Engineering Planning Division of EBMUD have indicated that the improvements are sized to meet the needs of Moraga through 2030.

EBMUD is currently updating the WSMP for the year 2040 and has not yet finalized the new unit water demand criteria (based on 22 different land uses). In the current plan, the unit demand was established for residential and non-residential use on a gallons per acre per day (gad) basis. It will be assumed that the use of 4,200 gad and 1,400 gad will be applied to single-family and multi-family land use, respectively, in the MCSP service area. These criteria are roughly equivalent to an average residential use ranging between 450 to 500 gallons per dwelling unit per day. In addition, an allowance of 1,700 gad for office and commercial activities and 100 gallons per unit per day for hotels, congregate care and assisted living will be used.

Applying the above unit criteria, the total average daily demand for the Proposed Project is about 460,000 gallons per day of which about 329,000 gallons per day is associated with new development. EBMUD water supply planning for development is based on the average daily flow and appropriate factors are applied for peak daily flows and fire flows to size the facilities. Any proposed development that adds 500 housing units or more is subject to a water assessment study by EBMUD. However, the proposed MCSP does not approve specific development applications, only change land use and zoning for the MCSP area. Therefore, a water assessment study is not required at this time, but will be required at the time of a specific development application for 500 or more housing units. EBMUD is also required to prepare an Urban Water Management Plan every five years that will address changing needs of the community.

### *Wastewater*

Implementation of the MCSP would increase sewage generation to the local and wastewater system, including the Moraga Pumping Station and CCCSD's wastewater treatment plant, and could require construction of additional wastewater collection pipelines within the MCSP area.

Wastewater is currently being collected at a pumping station on School Street and pumped through a force main to St. Mary's Road for gravity conveyance to an interceptor in Walnut Creek for delivery to CCCSD wastewater treatment plant in Concord. The treatment plant has a permit to treat 53.8 million gallons per day (mgd) while receiving total flows of less than 40 mgd. The needs of the service area are continually being assessed and monitored, and met by CCCSD through the updating of a 10-year Capital Improvement Plan (CIP). In discussions with the CCCSD Engineering Planning Division, unit wastewater loading criteria have been developed for the service area. These criteria are being used to prepare the 2008 Collection System Master Plan Update. Improvements in the current CIP were developed in the 2000 Plan Update using the same criteria.

The unit loading criteria are 225 and 150 gallons per dwelling unit per day (gud) for single- and multi-family dwelling units, respectively. A unit rate of 100 gallons per hotel room, congregate care and assisted living units was also assumed. Commercial wastewater flow generation was assumed at 1000 gad.

The Proposed Project and Action Alternatives would increase wastewater transmission and treatment demand, and could require the extension of new wastewater transmission infrastructure for future projects in the MCSP area. Using CCCSD wastewater generation factors for the planned land uses, the Proposed Project would generate 183,000 gallons per day (gpd) of which approximately 119,000 gpd is associated with new development.

Project-specific sewer capacity studies will be needed at the time specific development proposals are processed for approval to ensure any necessary local improvements are identified. Additionally, some of CCCSD facilities farther downstream do not have adequate cumulative flow carrying capacity under CCCSD's current design criteria for ultimate conditions. Improvements to correct the deficiencies are or will be included in CCCSD's CIP. Improvements to CCCSD's existing facilities that are required as a result of new development will be funded from applicable CCCSD fees and charges. Developers will be required to pay these fees and charges at the time of connection to the sewer system.

The Proposed Project would use approximately 0.008% of the remaining capacity of the wastewater treatment plant. This estimated wastewater generation from the Project would not significantly impact the existing wastewater treatment capabilities of CCCSD. CCCSD would therefore, be able to accommodate the projected growth under the MCSP Proposed Project and all Action Alternatives and would not result in the need of additional treatment plant facilities.

### *Solid Waste Disposal*

Solid waste generated by implementation of the Proposed Project and all Action Alternatives would be disposed at Keller Canyon Landfill. Keller Canyon Landfill has over 65 years of remaining capacity given the current rate of disposal. The Proposed Project and all Action Alternatives would not measurably reduce existing landfill capacity and no impact would result.

### *Hazardous Waste Disposal*

Contra Costa County Health Services Department Environmental Health Division (CCCHSD) regulates the storage, use and disposal of hazardous waste and materials in Contra Costa County. Currently hazardous waste can be deposited at a collection facility located in Martinez. CCCHSD has current permitted annual capacity of 850 tons, which is greater than the current annual throughput of 449 tons. The Proposed Project and all Action Alternatives would not measurably reduce existing hazardous material storage, handling, or disposal capacity, and no impact would result.

**Mitigation:** No mitigation is required.

**Impact:** **4.J-2. Will the Project create a significant hazard to the public or the environment through the routine transport, use, disposal of, or reasonably foreseeable upset and accidental release of hazardous materials?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

The No Project Alternative will not create a hazard to the public or the environment due to no project being implemented. There are currently no known hazardous materials on the site.. Therefore there is no impact as a result of selection of this alternative.

**Analysis:** *Less Than Significant Impact; Proposed Project and All Action Alternatives*

Based upon public records, there are no known hazardous materials on the MCSP site that would pose a risk to the public or environment. The Proposed Project and all Action Alternatives do not propose land uses that would utilize hazardous materials other than common household and retail/office cleaning supplies and materials. Construction of infrastructure associated with the Proposed Project and all Action Alternatives would likely utilize low level hazardous materials (e.g. paints, solvents, cleaners, and fuel). However, the amount of these materials used for construction and occupation of the MCSP land uses would be minimal and would result in low risk to the public and environment. Transportation of hazardous waste requires compliance with the DTSC by

obtaining a Hazardous Waste Transporter Registration. This registration ensures all transporters of hazardous materials have adequate insurance; employ proper means of transport and requires submittal of manifests to the DTSC. Due to the low level of toxicity associated with standard construction materials which will likely be used for the proposed project and action alternatives and the requirement to obtain a Hazardous Waste Transporter Registration for regulated wastes, the level of risk of exposure to the public or environment is low, and therefore this impact is considered less than significant.

**Mitigation:** No mitigation is required.

**Impact:** **4.J-3. Will the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ - mile of an existing or proposed school?**

**Analysis:** *No Impact; Alternative I (No Project)*

The No Project Alternative will not emit hazardous emissions or materials because no development would occur. In addition, there are currently no known hazardous materials on the site. Therefore, there is no impact under the No Project Alternative.

**Analysis:** *Less Than Significant; Proposed Project and All Action Alternatives*

Construction of the Proposed Project and all Action Alternatives would not result in emissions or handling of hazardous waste that would be exposed to public schools within ¼ mile of the MCSP site. Joaquin Moraga Intermediate School is just over ¼ mile to the south of the project site at the corner of Camino Pablo and Canyon Road. As stated in the analysis above, potential hazardous materials are associated with construction activities and building materials. Transportation of these materials is required to be licensed by the DTSC which that requires safety measures to ensure no toxic chemicals or hazardous materials are exposed to the public during transportation.

As currently proposed the Proposed Project and all Action Alternatives will not produce any emissions that will be hazardous to the public and associated school facilities within ¼ mile of the project site. Because no hazardous emissions or materials will be generated by the project this impact is considered less than significant.

**Mitigation:** No mitigation is required.

**Impact:** **4.J-4. Will the Project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5, and, as a result, would it create a significant hazard to the public or the environment?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

The DTSC website was reviewed for sites which are listed by the State as Federal Cleanup Sites, State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites including Hazardous Waste Facilities of both permitted and correction action sites. No sites identified by the DTSC are located in the Town of Moraga, including the MCSP area, therefore this impact is less than significant.

**Mitigation:** No mitigation is required.

**Impact:** **4.J-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?**

**Analysis:** *No Impact; Proposed Project and All Alternatives*

The MCSP area is surrounded by existing residential development and area has no direct contact with surrounding wild lands. Consequently, the MCSP has no wildland-urban interface areas.

The State of California has identified communities and areas that are high at-risk zones for wildfire. “Very High Fire Hazard Severity Zones” have been identified throughout the state. The nearest area that was identified as such is located in Orinda, but none were identified within the Town of Moraga. All structures that are built under the Proposed Project and all Action Alternatives will be required to comply with relevant fire codes, which are likely to include specifications related to sprinkler systems, location of hydrants, emergency vehicle access, and adequate water pressure. Mitigation Measure 4.L-1b: Fire Protection Plan in section 4.L – Public Services provides mitigation measures related to the provision of fire protection services. Based on the zoning regulation and location of the proposed project, this impact is less than significant.

**Mitigation:** No mitigation is required.

## **4.J-4 CUMULATIVE IMPACTS**

The impacts of other projects in the vicinity of the Proposed Project may have cumulative impacts when reviewed together with the MCSP. These projects include the following projects:

- Bollinger Valley residential development project consisting of 121 new homes in the Bollinger Canyon just to the south of the Moraga Center and to the east of St. Mary's College;
- Rancho Laguna 2 Residential Development, a proposed 35 single family home development;
- Palos Colorado, an approved 123 home development within the Town of Moraga and,
- Buildout of the 2002 Moraga General Plan.

The impacts on public utilities and hazards that may result from these projects listed above when considered together with the Proposed Project have the potential to create cumulative impacts. Many of the impacts to public utilities and hazardous materials from these other development projects would be similar to those identified in the analysis mentioned above. Mitigation measures are proposed for the other projects to decrease any significant impacts to less than significant. Therefore these impacts when considered together will be less than significant.

## **4.J-5 PREPARERS AND REFERENCES**

### **Preparers**

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### **Reviewers**

Rob Brueck, Hauge Brueck Associates

### **References**

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**Persons Contacted**

Borden, Battalion Chief Moraga-Orinda Fire District, Telephone Conversation, April 2008

Leavitt, Russel Engineering Assistant III, Central Contra Costa Sanitary District, Telephone conversation and e-mail correspondence April 2008

## 4.K SCHOOLS

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This section describes the existing facilities in the Moraga School District (MSD) and the Acalanes Union High School District (AUHSD) and the effects of the MCSP Proposed Project and Alternatives on the public schools in Moraga. This section presents an evaluation of the potential for increased enrollment to affect the school environment and induce the need to construct new facilities to maintain existing school quality.

Impacts relevant to population and housing are evaluated in the Population, Employment and Housing section (Chapter 4.B), and other public services such as fire, police, parks, libraries, and utilities are evaluated in the Public Services section (Chapter 4.L).

### 4.K-1 ENVIRONMENTAL SETTING

#### School Facilities

The high quality of Moraga's schools is consistently listed as one of the community's most valued features. The large majority of school-age children in Moraga attend public schools. MSD, with 3 elementary schools (kindergarten through grade 5) and 1 intermediate school (grades 6 through 8), and 2 high schools in the AUHSD serve the Town of Moraga. These public schools are:

- Camino Pablo Elementary School (grades K-5), 1111 Camino Pablo Boulevard;
- Donald L. Rheem Elementary School (grades K-5), 90 Laird Drive;
- Los Perales Elementary School (grades K-5), 22 Wakefield Drive;
- Joaquin Moraga Intermediate School (grades 6-8), 1010 Camino Pablo Boulevard;
- Campolindo High School (grades 9-12), 300 Moraga Road;
- Miramonte High School (grades 9-12), 750 Moraga Way.

MSD, with district offices at 1540 School Street in Moraga, manages elementary schools and the intermediate school, while the high schools are the jurisdiction of AUHSD with offices at 1212 Pleasant Hill Road in Lafayette. The two high schools serve students from Lafayette and Orinda, in addition to Moraga.

Table 4.K-1 lists school capacity, current enrollment and residual capacity. Capacities are estimates of the maximum number of students a facility can support and may result in less than ideal conditions (e.g., use of laboratory rooms as classrooms, larger class sizes, etc.) as envisioned under the MSD and AUHSD Strategic Plans (Moraga School District 2005, 2007, Acalanes Union High School District 2007).

Since reaching a peak of 1,918 students in 2000-2001, MSD enrollment has gradually decreased to current enrollment of 1,730 students in 2007-2008. Similarly, AUHSD reached a peak in the 2004-2005 school year with 5,906 students, declining to 5,876 students in 2007-2008, with 2,784 students at Campolindo and Miramonte High Schools. Current projections for both the MSD and AUHSD show a continued decreasing trend in enrollment (Schreder and Associates 2002,

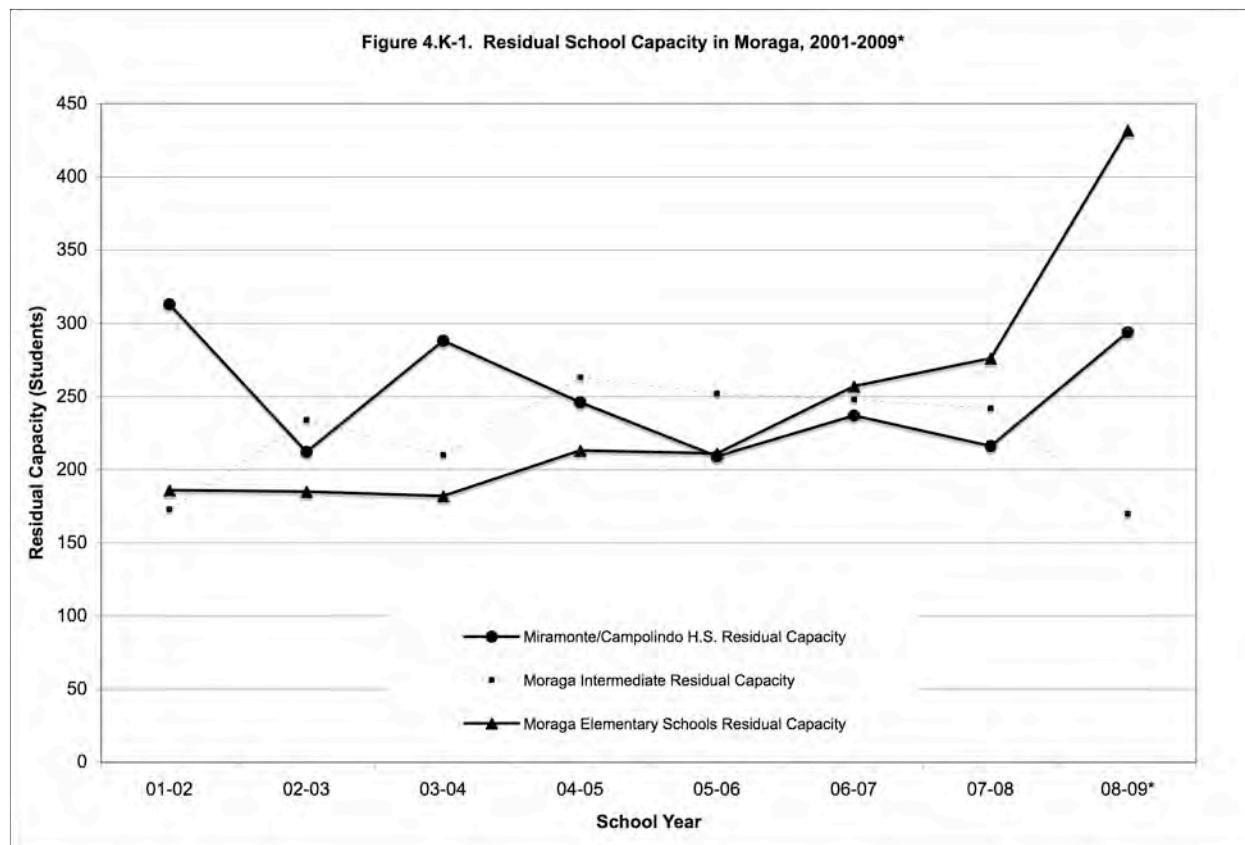
Acalanes Union High School District 2007, Learned 2007). Figure 4.K-1 shows school capacity, actual and projected enrollment trends for MSD and AUHSD.

**Table 4.K-1**

2007-2008 School Capacity, Enrollment, and Residual Capacity

School	Capacity	2007-2008 Enrollment	2007-2008 Residual Capacity
<b>Moraga School District</b>			
Rheem Elementary	492	339	153
Camino Pablo Elementary	448	406	40
Los Perales Elementary	400	317	83
<i>All elementary schools (K-5)</i>	<i>1,340</i>	<i>1,062</i>	<i>276</i>
Joaquin Moraga Intermediate (6-8)	908	666	242
<b>All MSD</b>	<b>2,248</b>	<b>1,730</b>	<b>518</b>
<b>Acalanes Union High School District</b>			
Miramonte High School	1,500	1,398	102
Campolindo High School	1,500	1,386	114
<i>Local AUHSD high schools (9-12)</i>	<i>3,000</i>	<i>2,784</i>	<i>216</i>
<b>Total All Schools</b>	<b>5,248</b>	<b>4,514</b>	<b>730</b>

Sources: Simonin 2007, Acalanes Union High School District 2007, Jack Schreder & Associates 2002, California Department of Education, 2007.



\*Based on enrollment projections for the 2008-2009 school year.

Independent of enrollment trends, facility needs may change over time, especially with goals of decreasing class sizes. As class sizes are lowered, the number of classrooms required to accommodate the same number of students increases. Facility expansions to meet class size reduction goals, if necessary, will be accomplished on the existing school sites. There are no plans to expand school facilities beyond current sites.

MSD and AUHSD currently have the following maximum class size goals (Simonin 2007):

- Grades 1-3: 20 students/classroom
- Grades 4-8: 28.5 students/classroom
- Grades 9-12: 26 students/class for core classes (math, science, language arts and social studies).

Funding of MSD includes a current fee of \$2.05 per square foot of new residential development, and \$0.33 per square foot of new commercial or retail development. This fee is reviewed and updated periodically. The AUHSD does not collect school impact fees, but assesses an annual parcel tax of \$189 throughout the district. This assessment is scheduled to expire on June 25, 2011 (Acalanes Union High School District 2007).

## 4.K-2 REGULATORY SETTING

### Town of Moraga Goals, Objectives and Policies

Three Town of Moraga General Plan Policies relate to public schools. These policies, and an analysis of the Proposed Project and Alternatives consistency with these policies, are presented in Table 4.K-6 below.

#### Evaluation Criteria

Table 4.K-2 presents criteria for analysis of school impacts.

**Table 4.K-2**

#### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.K-1. Will the Project increase demand for schools or libraries to such a degree that accepted service standards are not maintained and new facilities are required?	Class size, student enrollment, school capacity	Enrollment exceeds school capacity at target class size	CEQA Guidelines, XIII(a); Moraga General Plan Policies FS2.1-2.3
4.K-2. Will the Project conflict with local policies for providing public school facilities?	Number of policies under which a conflict would result	Conflicts with greater than 0 policy	CEQA Guidelines, XIII(a); Moraga General Plan Policies FS2.1-2.3

## 4.K-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.K-3 presents potential impacts to schools, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for schools conflicts is determined by existing school capacity in relation to school enrollment projections for each Alternative. Published reports, data, and enrollment projections provided by the State, MSD and AUHSD were reviewed, and MSD and AUHSD staff members were contacted, to establish whether the project would exceed, or significantly impact, their ability to provide services.

**Table 4.K-3****School Impacts – All Alternatives**

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact<sup>1</sup></b>	<b>Level of Significance<sup>2</sup></b>
4.K-1. Will the Project increase demand for schools to such a degree that accepted service standards are not maintained and new facilities are required?	Enrollment exceeds school capacity at target class size	P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.K-2. Will the Project conflict with local policies for providing public school facilities?	Enrollment exceeds school capacity at target class size	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

Source: HBA, 2008

Notes: 1. Type of Impact:

C	Construction	●	Significant impact before and after mitigation
P	Permanent	○	Significant impact before mitigation; less than significant impact after mitigation
		○	Less than significant impact; no mitigation proposed
		==	No impact

2. Level of Significance:

**Impact:** **4.K-1. Will the Project increase demand for schools to such a degree that accepted service standards are not maintained and new facilities are required?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no new housing, commercial, or retail land uses in the MCSP area. Consequently, Alternative 1 (No Project) will not generate any new students or demand for services in the MSD or AUHSD. Alternative 1 (No Project) will have no impact on existing school facilities or school services, and no mitigation is required.

**Analysis:** *Potentially Significant Impact; Proposed Project and All Action Alternatives*

Estimating new students generated by the Proposed Project and All Action Alternatives is based on the MSD and AUHSD enrollment projection formula for new residential developments (Learned 2007, Schreder 2002). Each new single-

family housing unit (sfu) built in Moraga is expected to generate the following number of new students:

- Elementary school students: 0.296/sfu
- Intermediate school students: 0.263/sfu
- High school students: 0.18 – 0.25/sfu

For the purposes of this analysis, the enrollment projection formulas developed by MSD and AUHSD are applied to all new non-senior housing. In other words, this analysis assumes that single-family, multi-family, and Saint Mary's College housing will result in the same number of new school age children per housing unit. In order to present the most conservative or "worst-case" scenario for potential impacts to high schools, only the higher rate of 0.25 student/sfu is presented.

Most senior housing developments allow for at least temporary residency of minors. According to AUHSD, less than one percent of the senior housing developments in the district contain school age children (Learned 2007). Therefore, this analysis makes a conservative assumption that up to 10% of active senior housing may include school age children at the same proportion as single-family homes.

New public school students, and resulting residual capacity based on 2007-2008 enrollment figures, are shown by alternative in Table 4.K-4. The Proposed Project and All Action Alternatives are expected to result in substantial increases in the number of public school students. Current enrollment levels are below capacity and expected to decrease into the reasonably foreseeable future. The MSD and AUHSD currently have sufficient residual capacity to accommodate new student enrollment that may be generated by residential development of the MCSP area while maintaining goals for teacher-student ratios and class sizes.

School enrollment projection data for the Proposed Project and All Action Alternatives in Table 4.K-4 show that public schools serving Moraga have sufficient capacity under current school year conditions to accommodate the number of projected new students. There is inherent uncertainty, however, in enrollment projections. In order to assist with facility planning, for example, MSD conducted a study in 2002 to estimate high, moderate, and low enrollment projections in Moraga (Jack Schreder & Associates 2002). Due to larger than expected changes to population demographics and employment opportunities throughout the Town of Moraga, elementary school enrollments failed to meet even the lowest student enrollment estimate calculated in the study (Simonin 2007). Even though the number new school age children expected to be generated by the Proposed Project is below current residual capacity levels, the increase in new students is still considered a potentially significant impact, and mitigation measure 4.K-1 is required to reduce this impact to a less than significant level.

**Table 4.K-4**

## Schools Enrollment Projection – All Action Alternatives

MCSP Alternative	New Residential Units		Elementary School		Intermediate School		High School <sup>1</sup>	
	Single-family & multi-family	Active senior	New students	Residual capacity	New students	Residual capacity	New students	Residual capacity
Proposed Project (720 units)	420	300	133	299	118	52	113	182
Alternative 2 (339 units)	339	0	100	332	89	81	85	209
Alternative 3 (400 units)	250	150	79	354	70	100	66	228
Alternative 4 (560 units)	330	230	105	327	93	77	88	206

Notes:

<sup>1</sup>Represents only the high enrollment projection of 0.25 student/sfu.**Mitigation: 4.K-1a: Implement General Plan EIR Mitigation 4.L-1: Development Impact Fees**

The Town shall prepare a Development Impact Fee Study to determine the fair share that developers within the MCSP area shall contribute for the operation and expansion of police, fire, parks, and school facilities in Moraga. At a minimum, the Study shall identify funding necessary to maintain services at 2000 levels.

**4.K-1b: Pay school impact fee at issuance of building permit and schedule residential development.**

At the time the Town of Moraga issues building permits, the Project Applicants shall pay the applicable school impact fees for new residential, commercial and retail construction to the MSD. The current fees are \$2.05/sf for new residential construction and \$0.33/sf. The AUHSD does not collect school impact fees, but currently assesses an annual parcel tax of \$189 throughout the district. This assessment is scheduled to expire on June 25, 2011 (Acalanes Union High School District 2007). Table 4.K-5 provides an estimate of school impact fees for the Proposed Project and All Action Alternatives at existing rates.

For the purposes of this analysis, new single-family detached residences are assumed to be an average 4,000 sf and generate \$8,200 in fees per home. All other housing, including multi-family, Saint Mary's College student/faculty/ staff housing, and senior housing, are all assumed to be an average of 1,500 sf, generating \$3,030/unit.

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New commercial and retail square footage for the Proposed Project and All Action Alternatives, and includes that described in the Project Description, plus the following:

- Hotel/Bed & Breakfast are assumed to include a total of 1,000 sf of developed space per room accommodation; and
- Congregate care and assisted living facilities are assumed to include a total of 500 sf of developed space per accommodation unit.

Impacts to schools are considered fully mitigated under state law by the payment of state mandated school impact fees (SB 50), and no additional mitigation is required. Nonetheless, the Town has an interest in maintaining the quality of public schools while avoiding potential environmental impacts associated with new school construction. Consequently, prior to the issuance of building permits, the Town shall consult with the MSD to obtain the most recent enrollment projection figures. When necessary to avoid a potential exceedence of existing school capacity, the Town shall request the Project Applicant to voluntarily develop a modified residential construction schedule to avoid or minimize potential overcrowding in the school system.

**Table 4.K-5**
**Estimated Moraga School District Impact Fees – All Action Alternatives**

MCSP Alternative	<u>Residential Housing Units</u>			<u>Commercial/Retail</u>			<u>Total School Impact Fee (\$)</u>
	<u>Detached single-family<sup>1</sup></u>	<u>Other housing<sup>2</sup></u>	<u>Total new sf</u>	<u>School Impact Fee (\$2.02/sf)</u>	<u>Total new sf<sup>3</sup></u>	<u>School Impact Fee (\$0.33/sf)</u>	
Proposed Project (720 units)	20	700	1,130,000	\$2,282,600	300,000	\$99,000	<b>\$2,381,600</b>
Alternative 2 (339 units)	339	0	1,356,000	\$2,739,120	180,000	\$17,280	<b>\$2,756,940</b>
Alternative 3 (400 units)	50	350	725,000	\$1,464,500	195,000	\$59,400	<b>\$1,523,900</b>
Alternative Alternative 34 (560 units)	65	495	1,002,500	\$2,025,050	180,000	\$64,350	<b>\$2,089,400</b>

**Notes:**

<sup>1</sup>Low density, detached single-family housing with an average of 4,000 sf/home.

<sup>2</sup>All higher density and multi-family housing, including Saint Mary's College housing, and active senior housing, with an average of 1,500 sf/housing unit.

<sup>3</sup>Includes Project Description for commercial/retail, a total developed area of 1,000 sf/hotel and bed & breakfast accommodation, and 500 sf/unit for assisted living/congregate care unit

**After****Mitigation:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

Impacts to schools are considered fully mitigated under state law by the payment of state mandated school impact fees (SB 50), and no additional mitigation is required. There is sufficient existing capacity in the public schools to accommodate all projected new students without requiring the construction of new facilities. Therefore, Mitigation Measure 4.K-1a and 4.K-1b will reduce the potentially significant impact associated with increased student enrollment in local public schools to a less than significant level. Due to the inherent uncertainty in creating school enrollment projections, however, the Town of Moraga shall consult with the MSD to obtain the most recent enrollment figures and projections when new residential building permit applications are submitted. When necessary to avoid potentially exceeding existing school capacity, the Town shall request that the applicant voluntarily develop a modified construction schedule for new single-family residential development.

**Impact:** **4.K-2. Will the Project conflict with local policies for providing public school facilities?****Analysis:** *No Impact; Alternative 1 (No Project)*

Alternative 1 (No Project) involves no change to existing General Plan policies and no new construction or ground disturbance, and will have no effect on existing policies. No mitigation is required.

**Analysis:** *Less than Significant; Proposed Project and All Action Alternatives*

The Project and all Action Alternatives are consistent with existing General Plan goals and policies related to providing school facilities. Table 4.K-6 below lists all relevant policies and describes how the Proposed Project and All Alternatives are consistent. This is considered a less than significant impact and no mitigation is required.

**Mitigation:** No mitigation is required.

**Table 4.K-6**

## Consistency Analysis with General Plan Policies

General Plan Policy	Consistency Determination
<u>Policy FS2.1: Population Growth and School Capacity.</u> Ensure that potential impacts on school facilities are considered when reviewing and approving development proposals, working with the MSD and ACUHSD to determine potential impacts and establish appropriate mitigations, as necessary.	<u>Consistent.</u> The potential impacts of the Proposed Project and All Alternatives on school facilities are described and analyzed in this EIR. The MSD and AUHSD will review the data and analysis presented in this document.
<u>Policy FS2.2: Pace of Growth.</u> Control the timing and location of new residential development in a way that allows the MSD and ACUHSD to plan and finance facility expansion in an orderly fashion.	<u>Consistent.</u> The scheduling of new residential construction for the Proposed Project and All Action Alternatives is considered in Mitigation Measures 4.K-1 as a means to mitigate potential adverse impacts on school facilities due to project-related increased in enrollments.
<u>Policy FS2.3: School Impact Fees.</u> Cooperate with the school districts to assess an impact fee on new subdivision developments to offset the costs of facility expansion and other school impacts resulting from those developments, in accordance with state law.	<u>Consistent.</u> The payment of appropriate school impact fees consistent with State law (SB 50) for the Proposed Project and All Action Alternatives is described in Mitigation Measures 4.K-1 as a means to mitigate potential adverse impacts on school facilities due to project-related increased in enrollments.

**4.K-4 CUMULATIVE IMPACTS**

The Proposed Project and all Action Alternatives are expected to result in potentially significant impacts to public school facilities due to substantial projected increases in school-age children associated with new residential development. The Proposed Project is expected to add 133 new elementary school students, 118 new intermediate school students, and up to 113 new high school students. While MSD and AUHSD currently have available residual capacity to accommodate these new students within existing classrooms, other residential development projects have been approved or proposed in the Town of Moraga that, if built, will cumulatively affect school enrollment and capacity. These other residential construction projects include Rancho Laguna 2, Palos Colorado, and Bollinger Valley, which together will add 279 new single-family homes to Moraga. The 2002 General Plan EIR assumed a complete buildout of 698 new homes in Moraga during the planning period. Table 4.K-7 below provides a summary of the new homes, students, and impact fees that would be generated by the Proposed Project, other planned or proposed projects in Moraga, and complete buildout of the 2002 General Plan.

For the purposes of this analysis, only MSD-wide enrollment and capacity projections are provided because new students would be generated throughout district boundaries. Only the upper end projection for the number of high school students is presented. A key assumption of the calculations presented in Table 4.K-7 is that all projects are currently built and occupied, and

the existing school capacity for the 2007-2008 school year is held constant. Consequently, this scenario is unrealistic because enrollments and residual school capacity are expected to change with demographic shifts in Moraga independent of any new project, and it is highly unlikely that any one of these projects will be built and occupied within a single year, and even less likely that more than one will be completed simultaneously.

**Table 4.K-7**

Potential Cumulative Impacts to Public Schools

Cumulative Scenario	Elementary School		Intermediate School		High School <sup>1</sup>		School impact fees at \$2.02/sf (residential only) <sup>2</sup>
	New students	Residual capacity	New students	Residual capacity	New students	Residual capacity	
Proposed Project with Other Residential Projects <sup>3</sup>	244	188	217	-47	206	88	\$6,510,460
Proposed Project with 2002 General Plan Full Buildout <sup>4</sup>	216	216	192	-22	182	112	\$4,536,920

Notes:

<sup>1</sup>Only the higher end enrollment projection of 0.25 student per sfu is presented.

<sup>2</sup>Includes only residential fees at \$2.02/sft as other projects have none or an undefined quantity of commercial-retail space. Assumes an average single-family detached home size of 4,000 sf with all other housing units an average of 1,500 sf.

<sup>3</sup>Other projects include a total of 279 new single-family detached housing units.

<sup>4</sup>Full buildout of the 2002 General Plan includes 698 new homes, subtracting 339 (278 multi-family and 45 single-family detached) homes assumed to be built within the MCSP area.

The cumulative impact of existing approved and proposed major residential developments in Moraga or full build out of the General Plan is expected to be 244-216 new elementary and 217-192 new intermediate age students in MSD, and up to 206-182 new students in AUHSD. The expected residual capacity in the schools will accommodate elementary and high school age students, but Joaquin Moraga Intermediate School capacity will be exceeded by 47-22 students. This is considered a significant cumulative impact on existing school facilities, and may decrease the quality of public school facilities or cause environmental impacts associated with construction of new facilities to adequately accommodate the increased number of students at current standards.

Construction and occupation of all planned and approved residential projects will substantially increase the number of school age children, but impacts to school facilities are difficult to predict. Actual school enrollment is very difficult to predict beyond a few years into the future. For example, a 2002 study for the MSD provided high, medium, and low enrollment projections, and by 2005 MSD enrollment was below the lowest estimate and has continued to decline (Jack Schreder & Associates 2002, Simonin 2007).

The cumulative school enrollment projections and impact analysis on school capacity presented in Table 4.K-6 above assume, unrealistically, all projects are currently built and occupied with present school enrollment figures. The final number of residences, and the construction schedule, are still unknown. Normally, larger scale developments are built over multiple years in a series of phases due to permit constraints, developer funding, and market-driven demand. Current estimates for the Bollinger Valley project, for example, is a 5-20 year construction timeline, and the Moraga General Plan covers a planning period through the year 2022.

School enrollment is also largely a function of long-term and unpredictable demographic shifts. Residential communities progress through cycles of aging demographics or influxes of younger families. Regional shifts in the job market and housing affordability affect where families live and work. School enrollment in Moraga has been declining for several years, and actual school capacity will change by the time any one of these projects is developed. Therefore, until building permits are issued, and school enrollment and capacity is reasonably predictable for the time or expected occupancy, it is considered speculative to make a determination of the cumulative impact of all these projects on schools.

All of these projects will be required to pay school impact fees, currently estimated to total \$6.5 - 4.5 million for just the residential components, and impacts to schools are considered fully mitigated under state law by the payment of state mandated school impact fees (SB 50), and no additional mitigation is required. Nonetheless, the Town of Moraga may consult with the MSD and AUHSD during the building permit application process, and as needed, request that project applicants voluntarily revise construction schedules to minimize impacts to school facility capacity.

## **4.K-5 PREPARERS AND REFERENCES**

### **Preparers**

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### **Reviewers**

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### **References**

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## 4.L PUBLIC SERVICES

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This section addresses the public services constraints on improvements and construction of facilities as part of the MCSP and alternatives. The setting section provides information on the existing conditions of these public services and facilities.

### 4.L-1 ENVIRONMENTAL SETTING

#### **Police Services**

The Town of Moraga is within the jurisdiction of the Moraga Police Department (MPD) located on Rheem Boulevard. Response time to the far side of the project area would be approximately 3 min. A total of 13 sworn officers, five reserve officers, and two civilians currently comprise the MPD. The sworn personnel include the Chief of Police, three Sergeants, one Detective and eight Patrol Officers. Currently there are 0.79 officers per 1,000 people in the Town of Moraga.

Crime in Moraga is relatively low as compared to other areas of Northern California. While the staff levels of officers is below what is generally accepted standard of 1 officer for every 1,000 people, the relative low crime rates for the area allow the MPD to adequately respond to calls for service. In addition, the Contra Costa County Sheriff's Department provides assistance in responding to emergency calls. Traffic related offenses are the responsibility of the California Highway Patrol in the County outside the Town of Moraga and other unincorporated areas.

#### **Fire Protection**

The Moraga-Orinda Fire District (MOFD) provides fire protection services for the Town of Moraga. Station 41 located at 1280 Moraga Way is within the project area and will be the primary responder with a response time of two minutes. MOFD is responsible for providing emergency services including residential, commercial and wild land fires, medical emergencies and other hazardous situations. First Responder Paramedics is also located at Station 41 and is available for responding to necessary emergency situations. Total staff of the MOFD includes 72 employees, 24 reserve firefighters and 6 volunteer communication personnel. Station 41 currently occupies five rescue responders, an aerial ladder fire engine, an ambulance, a wild land engine, and a California Office of Emergency Services fire engine. Two other stations are in the vicinity of the project, Station 42 and Station 44. These stations would also be available for emergency response.

Individual fire flows for structures are based on structure size and construction type with a range of 1,000 to 2,000 gallons per minute at 20 psi for two hours. The fire flow requirements for MCSP proposed buildings will be addressed upon individual evaluation of specific structures once development applications are available.

## 4.L-2 REGULATORY SETTING

### Town of Moraga Goals, Objectives and Policies

The Moraga 2002 General Plan has numerous goals, objectives and policies addressing public services. The applicable goals, objectives and policies are listed below.

#### **Goal GM1 Growth Management - Maintenance of approved Performance Standards for Town facilities, services and infrastructure.**

Policy GM1.5. Other Performance Standards. Establish the following performance standards for other Town facilities, services and infrastructure. These standards pertain to the development review process and should not be construed as applying to existing developed lands. Proposed developments must include mitigation measures to assure that these standards or their equivalent are maintained. Modification to these standards may be accomplished by a resolution of the Town Council.

**Police.** Maintain a three-minute response time for all life-threatening calls and those involving criminal misconduct. Maintain a seven-minute response time for the majority of non-emergency calls.

#### **Goal PS2 Police and Emergency Services - A high level of fire and life safety.**

Policy PS3.1 Cooperation with the Moraga-Orinda Fire District. Cooperate with the Moraga-Orinda Fire District in developing standards, guidelines and local ordinances to assure provision of adequate fire protection and emergency medical service for all persons and property in the community.

Policy PS3.2 Fire Stations. Maintain two fire stations in the Town. Work with the Moraga-Orinda Fire District to support its ongoing facility improvement program, including but not limited to the relocation of Station 42 from Rheem Boulevard to Moraga Road (as indicated on the General Plan Diagram).

Policy PS3.3 Response Times. Provide a maximum emergency response driving time of 3 minutes and/or a travel distance of not more than 1.5 miles for response vehicles from the closest fire station to arrive and effectively control fires and respond to medical and other emergencies in the community.

Policy PS3.4 Fire Flows. Deploy the fire-fighting forces of the Moraga-Orinda Fire District to deliver a minimum fire flow in accordance with the adopted standards of the Moraga-Orinda Fire District. Major fires requiring fire flows in excess of the adopted standards will exceed the initial fire attack capability of local fire-fighting forces and structures involved in such fires are expected to incur major fire damage unless protected by fire resistive interiors and fire sprinkler systems.

Policy PS3.5 Development Review for Emergency Response Needs. Evaluate new development proposals to ascertain and mitigate problems associated with emergency response needs.

Policy PS3.6 Fire Vehicle Access. Provide access for fire-fighting vehicles to all new developments in accordance with fire access standards of the Moraga-Orinda Fire District and Town of Moraga Ordinances.

Policy PS3.7 Preemptive Devices at Traffic Signals. Equip all new traffic signals with preemptive devices for emergency response services. Existing traffic signals significantly impacted by new developments shall be retrofitted with preemptive devices at developer's cost.

Policy PS3.8 Fire Safety Devices in Buildings. Require the installation of appropriate fire safety devices in all structures at the time of original construction, additions, or remodeling, in accordance with adopted building codes and standards.

Policy PS3.9 High Occupancy Residential Buildings. Require approved built-in fire protection systems in new construction in high occupancy residential buildings (such as multi-story/multi-unit structures, group quarters, etc.) in accordance with Moraga-Orinda Fire District standards. For each new building or addition exceeding 5,000 square feet of fire area in high occupancy residential buildings, a comparable amount of existing fire areas shall be equipped with approved built-in fire protection systems.

Policy PS3.10 Fire Protection Systems. Cooperate with the Moraga-Orinda Fire District to enforce requirements for built-in fire protection systems as required by ordinance, including specialized built-in fire protection systems that may be required based upon building size, use or location.

Policy PS3.11 Development Review by the Moraga-Orinda Fire District. Require proposed construction projects that meet criteria established by the Moraga-Orinda Fire District (MOFD) to be reviewed by the MOFD at the beginning of the Town review process and before permits are issued. The MOFD shall submit conditions of approval for such projects to ensure that they meet adopted fire safety standards.

Policy PS3.12 Hazardous Fire Areas. Apply special fire protection standards to all new developments in hillside, open space, and wild land interface areas. Fire prevention measures such as removal of dry grass and brush, landscaping with fire and drought-resistant vegetation, provision of adequate water supplies and access for fire-fighting vehicles shall be required to reduce the risk of wild land fires. All new structures located in hazardous fire areas shall be constructed with fire resistant exterior materials consistent with applicable building codes and standards.

Policy PS3.13 Dry Grass and Brush Control. Require that all properties be maintained so as to preclude the existence of dry grass and brush that would permit the spread of fire from one property to another. Encourage preventive measures by homeowners to reduce fire risks.

Policy PS3.14 Fire Retardant Roofing. Require fire retardant roofing of Class B or better in all new construction and when replacing roofs on existing structures.

Policy PS3.15 Fire Roads and Trails. Require adequate fire access to open space areas in accordance with Moraga-Orinda Fire District standards.

### Evaluation Criteria

Table 4.L-1 presents criteria for analysis of public services impacts.

**Table 4.L-1**

#### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.L-1. Will the Project increase demand for public services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:			
a. Police protection?	Police response time; Ratio of service personnel to population	More than 3 minute response time for emergency and 7 minutes for non-emergency calls	CEQA Guidelines VII(g), XIII(a) and XV(e); MPD service standards; Moraga General Plan Policies PS3.6 and GM1.5
b. Fire protection?	Fire response time; Ratio of service personnel to residential population	More than 2 minute response time for fire; More than 1.5 miles from fire station	CEQA Guidelines VII(g), XIII(a) and XV(e); MOFD service standards; Moraga General Plan Policies PS3.6 and GM1.5
4.L-2. Will the Project impair or physically interfere with an adopted emergency response or evacuation plan?	Inconsistencies with plan policies or impediments to implementation	Greater than 0 plan or policy conflicts	CEQA Checklist VII(g) and XV(e); MOFD and MPD adopted response and evacuation plans; Moraga General Plan Policy PS3.1

### 4.L-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.L-2 presents potential public services impacts, outlines points of significance, type of impact and also ranks the level of significance for all Alternatives. The potential for public services conflicts is determined by the location of the project in proximity to services, current service levels and the project's potential to disrupt existing services.

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Adequate Police and Fire Protection Service is the primary public services concern for all the Alternatives.

**Table 4.L-2**
**Public Services Impacts –All Alternatives**

<b>Impact</b>	<b>Point of Significance</b>	<b>Type of Impact<sup>1</sup></b>	<b>Level of Significance</b>
4.K-1. Will the Project increase demand for public services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:			
a. Police protection?	More than 3 minute response time for emergency and 7 minutes for non-emergency calls	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
b. Fire protection?	More than 2 minute response time for fire; More than 1.5 miles from fire station	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.K-2. Will the Project impair or physically interfere with an adopted emergency response or evacuation plan?	Greater than 0 plan or policy conflicts	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○

Source: HBA 2008

Notes:	1. Type of Impact:	2. Level of Significance:
C	Construction	● Significant impact before and after mitigation
P	Permanent	○ Significant impact before mitigation; less than significant impact after mitigation
		○ Less than significant impact; no mitigation proposed
		== No impact

**Impact:** **4.L-1.a Will the Project increase demand for police services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Implementation of the No Project Alternative would not result in any increase in demand for Police Protection Services due to the fact that no increase in development or population would occur. Therefore no impact will result.

**Analysis:** *Less than Significant; Proposed Project and All Action Alternatives*

All action alternatives would result in an increase in new residents in the Town of Moraga. This increase in population within the Town would result in an increased need in police protection services. The Proposed Project would result in an estimated 1,614 new residents in the Town of Moraga, or 434 fewer residents than analyzed in the 2002 General Plan EIR for the full buildup of the General Plan. The Proposed Project is an overall increase of 10% of the population of Moraga at full MCSP buildup. The expected population increase under each alternative would be less than the Proposed Project. Table 4.B-3 in Section 4.B: Population, Employment, and Housing, provides a summary of the estimated new residents in the MCSP area under the Proposed Project and each alternative.

As stated in the setting section the accepted standard is one officer per 1,000 residents. While the existing ratio is below this standard, it is currently accepted due to the relative low crime rate within the Town of Moraga. The Proposed Project and Action Alternatives would result in increased calls and emergencies, which would impact the MPD's ability to maintain response times and provide adequate service. Due to the close proximity of the project area to the MPD, the response time would not be negatively impacted below acceptable levels. The increase in population, however, has potential to decrease availability of officers due to increased demand and therefore decrease response time during multiple call periods.

The increase in development as proposed in the Action Alternatives would require anywhere between one (Alternative 2) and two (Proposed Project) new police officers. While the existing crime rate is relatively low, the increase in population would further degrade existing service ratios and could have an impact on the safety of existing and future residents. The 2002 Moraga General Plan EIR states the existing facilities for the Town of MPD are currently inadequate. The required increase of officers due to increases in population would likely exacerbate this condition. Therefore this impact is considered potentially significant.

**Mitigation: 4.L-1a: Fee Payment to the Town of Moraga for increased Police Protection Services.**

The Project developers shall provide payment to the Town of Moraga General Fund for increased Police Protection Services. Payment shall be required upon completion of approved projects that will result in an increase in population within the MCSP area. The amount of payment shall be equal to the degree of increased population that would be necessary to maintain the one Police Officer per 1,000 residents ratio for the new development population levels.

**After**

**Mitigation: Less than Significant Impact; All Action Alternatives**

Payment of fees to the Town of Moraga would allow for the MPD to maintain adequate response times and availability to respond to emergencies. Monies would also be used for operation and expansion of facilities that are necessary due to increases in population.

**Impact: 4.L-1.b Will the Project increase demand for fire protection services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:**

**Analysis: No Impact; Alternative 1 (No Project)**

Implementation of the No Project Alternative would not result in any increase in demand for Fire Protection Services because no increase in development or population would occur. Therefore no impact will result.

**Analysis: Less than Significant; Proposed Project and All Action Alternatives**

Construction of proposed structures and development within the MCSP area would increase the potential for fires and emergencies within the Town of Moraga. MOFD Station 41 is located within the Proposed Project area and associated Action Alternative areas. While the proposed increased development may result in increased need for fire protection services, discussions with MOFD Battalion Chief Borden (April 2008) revealed that the existing level of staffing and station placement in the area would be sufficient to meet the fire protection need resulting from development of the MCSP Action Alternatives.

Fire Station 41 is located within the MCSP area, and the response time to all areas within the project site would be less than three minutes. No part of the Proposed Project would be further than 1.5 miles away from a MOFD station and therefore is in compliance with the evaluations standards outlined in the setting. Based on input from MOFD and the close proximity of the proposed development to existing emergency services buildings and stations, the existing service capacity is adequate.

However, proposed MCSP residential and commercial development may create unsafe fire conditions if not properly designed. The MCSP will include new roadways serving high density residential and commercial buildings. As such, the following mitigation measures will ensure potential fire protection impacts are less than significant upon construction of the proposed development.

**Mitigation: 4.L-1b: Fire Protection Plan**

The project developers shall provide to the Town of Moraga and the MOFD for review and approval a Fire Protection Plan that shall include the following:

- The proposed structures shall be serviced by adequate water supplies to provide adequate flow and pressure for fire suppression.
- Fire hydrants shall be installed at the required distances from all commercial and residential structures.
- The proposed project shall be consistent with the Town of Moraga's emergency evacuation plan and all streets shall be sized to allow for adequate access of emergency vehicles.
- Demonstrated compliance with relevant General Plan Public Safety Goals and Policies.
- Fire sprinklers shall be installed in commercial buildings and single family dwellings as required by the MOFD in accordance with Ordinance #02-02.

**After**

**Mitigation:** *Less than Significant Impact; All Action Alternatives*

**Impact:** **4.K-2. Will the Project impair or physically interfere with an adopted emergency response or evacuation plan?**

**Analysis:** *No Impact; Alternative 1 (No Project)*

Implementation of the No Project Alternative would not physically interfere with an adopted emergency response or evacuation plan due to the fact that no increase in development or population would occur. Therefore no impact will result.

**Analysis:** *Less than Significant Impact; Proposed Project and All Action Alternatives*

The MCSP, as noted in the project description is in the central part of the Town of Moraga. Development of the proposed specific plan will require

installation of new roadways and infrastructure. This new development, including new roadways, curb cuts, and signals will be required to comply with the Town of Moraga's evacuation plan. The proposed project will not impede egress due to its central nature, therefore this impact is considered to be less than significant.

**Mitigation:** No mitigation is required.

#### **4.L-4 CUMULATIVE IMPACTS**

The impacts of other projects in the vicinity of the Proposed Project may have cumulative impacts when reviewed together with the MCSP. These projects include the following projects:

- Bollinger Valley residential development project consisting of 121 new homes in the Bollinger Canyon just to the south of the Moraga Center and to the east of St. Mary's College;
- Rancho Laguna 2 Residential Development, a proposed 32 single family home development;
- Palos Colorado, an approved 123 home development within the Town of Moraga and,
- Buildout of the 2002 Moraga General Plan.

The impacts on public services that may result from these projects listed above when considered together with the Proposed Project have the potential to create cumulative impacts. Many of the impacts to public services from these other development projects would be similar to those identified in the analysis mentioned above. However the Bollinger Valley, Rancho Laguna 2 and Palos Colorado projects have impacts associated with exposure of these developments to wild fire, as they are adjacent to non-developed areas. These other project sites are located greater distances from police and fire stations, so emergency response times may not be adequate. All new development is required to pay service fees to the Town of Moraga to ensure adequate Police Protection Services are maintained. In addition, all properties are required to pay a Fire Flow Tax. The Fire Flow Tax is utilized exclusively for improvements to the Moraga water distribution system as operated by East Bay Municipal Utility District to ensure adequate capacity and pressure. Mitigation measures are proposed for the other projects to decrease any significant impacts to less than significant. Therefore these impacts when considered together will be less than significant.

## **4.L-5 PREPARERS AND REFERENCES**

### **Preparers**

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### **Reviewers**

Rob Brueck, Hauge Brueck Associates

### **References**

Moraga Orinda Fire District Website, April 2008 <http://www.mofd.org/index2.htm>

Moraga Police Department Website, April 2008 <http://www.moraga.ca.us/police/>

### **Persons Contacted**

Borden, Battalion Chief Moraga-Orinda Fire District, Telephone Conversation, April 2008

Moraga Police Department, Telephone Conversation, April 2008

## **4.M CULTURAL RESOURCES**

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This section addresses the cultural resource constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives. The analysis expands upon the information provided in Chapter 4.J, Cultural Resources of the Moraga 2000 General Plan Update Draft EIR, August 2000.

### **4.M-1 ENVIRONMENTAL SETTING**

#### **Introduction**

The 187-acre Moraga Center Specific Plan (MCSP) area is located in the vicinity of the intersection of Moraga Road and Moraga Way the Town of Moraga (see Figure 2-1, Regional Location Map). The Moraga Commons Park and Recreational Area as well as additional residential development bound the MCSP area to the north with residential development to the east, west and south.

Approximately half of the MCSP area is undeveloped. Future development of the project in accordance with the proposed Specific Plan could have significant effects on potential cultural and historic resources within the MCSP.

Cultural resources identified within the MCSP area can be incorporated into future project designs to meet the goals and policies established in the Moraga 2002 General Plan, primarily Community Development, CD7 Historic Resources, and Land Use, LU3.1 Moraga Center Area Specific Plan (j-k) Historic Preservation, Creek Protection and Orchard Preservation. In order to meet these goals and policies the first step is to identify the cultural resources present within the MCSP.

#### **Cultural Resources Within the Specific Plan Area**

In order to assess the potential cultural resources within the MCSP area, a phased approach of identification has been undertaken. The approach began with a search of existing records to identify previously recorded cultural resources. Identifying potential unknown cultural resources within the MCSP using an intensive archaeological and historic architectural pedestrian survey is proposed for MCSP areas considered to have a high chance for previously unidentified resources. Cultural resources identified during studies for proposed development applications would then be evaluated to determine their significance for the National Register of Historic Places and the California Register of Historic Resources. After evaluation of the resources has been completed, mitigation measures would be developed to avoid or adequately study potentially significant resources (e.g., those eligible for the historic record).

The first task to identify cultural resources within the MCSP is to conduct a records search of previously conducted cultural resources surveys and recorded resources. In April 2008, a record search was conducted at the Northwest Information Center (NWIC)

of the California Historical Resources Information System at Sonoma State University, Rohnert Park, California.

The following local, state, and federal cultural resource inventories were reviewed:

- Directory of Properties in the Historic Property Data File for Contra Costa County (April 2008), which includes properties evaluated for the National Register of Historic Places, California Register of Historical Resources, and various other state and local registers;
- The California Historic Resources Inventory (March 2008);
- Historic American Building Survey (March 2008);
- The General Land Office Plat of Oakland East (T1S; R2W; sections 18 and 19);
- Five Views: An Ethnic Sites Survey for California (1988); California Historical Landmarks (1996); and
- Historic Spots in California (1990).

A letter was sent to the list of interested parties identified by the NAHC on January 10, 2008 for the Bollinger Valley Project EIR (AES 2008). The same Native American Individuals identified for projects located in Contra Costa County were sent letters on May 2, 2008, asking them to please comment and identify any known archaeological resources and sacred lands within the MCSP area. To date, no responses have been received.

The area reviewed consisted of a ½ mile radius beyond the boundaries of the MCSP. The literature review identified five previously completed studies within the MCSP, and three additional studies adjacent or just outside the MCSP area. The studies listed in Table 4.M-1 represent less than 5% of the total MCSP area – meaning only 5% of the MCSP area has been subject to intensive pedestrian archaeological survey.

**Table 4.M-1**

## Previously Completed Cultural Studies Within the MCSP

<b>NWIC Report #</b>	<b>Author(s), Year</b>	<b>Title</b>	<b>Sites Recorded</b>
S-00276	David A. Fredrickson 1976	An Archaeological Survey near Corliss Drive, Moraga, Contra Costa County, California	No sites recorded
S-00712	David Chavez 1977	An Archaeological Field Reconnaissance of the Proposed Moraga Office Park (letter report)	No sites recorded
S-07831	Robert Cartier 1986	Addendum to the Cultural Resource Evaluation of a Parcel on Grade Canyon Road in the Town of Moraga, County of Contra Costa, California	No sites recorded
S-01316	Cindy Desgrandchamp 1978	Archaeological Survey Report, Rescinded Route 04-CC-77, Excess Parcels 24524-07-01, 24524-08-01, 24524-08-01, 24524-16-01, 19575-01-01, 24524-10-01, 19575-01-01, 24524-03-01, 24524-11-01, 24524-13-01, in Moraga, Contra Costa County, California	No sites recorded
S-10475	Paul Miley Holman 1988	Moraga Country Club Golf Course Expansion Plans, Moraga, Contra Costa County, California	No sites recorded
S-15812	Paul Miley Holman 1993	Archival Research and Field Inspection of the Proposed Country Club Drive Bridge Replacement Project, Moraga, Contra Costa County, California	No sites recorded
S-22702	Garcia and Associates	Cultural Resources Inventory for the Lamorinda recycled Water Project, Contra Costa County, California	No sites recorded
S-30330	Earth Touch, Inc.	New Tower Submission Packet, FCC Form 620	No sites recorded

The records search identified six previously recorded cultural resources within the Town of Moraga, and no cultural resources within the MCSP area. The resources referenced in Table 4.M-2 are listed in the Office of Historic Preservation's Historic Property Directory, consisting of both a built environment and archeological component. The properties not evaluated have been identified during reconnaissance surveys, and may meet significance criteria. Only one property has been evaluated and found to meet the criteria on a locally significant level (Eucalyptus Globulus Tree).

**Table 4.M-2**

## Previously Recorded Cultural Resources

Address	Description	Date of Construction	Evaluation Results
Moraga Road	Willow Spring School Site	1855	Not evaluated
St. Mary's Road	St. Mary's College	1928	Not evaluated
Camino Ricardo	Eucalyptus Globulus Tree	no date	Eligible for local listing only
209 Moraga Way	Jenkins (Alexander) House	Unknown	Not Evaluated
None	Moraga Lumber Mill Site	Unknown	Not Evaluated
1002 Viader Drive	Moraga Barn	1913	Not Evaluated

Source: Historic Properties Index

The Historic Resources Index (HRI) consists of properties listed on the California Register of Historic Resources. The HRI has four properties listed for the Moraga area, including:

**The Willow Spring School Site:** The first school erected in the Moraga Valley in 1855. It was abandoned in 1918, then moved to Moraga Company Ranch as a recreation hall for resident laborers. It burnt down in the 1940's. However the old school bell is preserved in the cupola of the Moraga Ranch mess hall that is now a commercial establishment.

**Saint Mary's College:** One of the oldest colleges in the west being dedicated in San Francisco in 1863. Incorporated and empowered to confer degrees in 1872. Moved to Oakland in 1889 then to Moraga in 1928.

**The John Courier Store or Mason's Store Site:** Site of a two-story structure built in 1854. Known as John Courier Store or Mason's Store. The two business partners served the needs of travelers as well as residents (teamsters and lumberjacks) working the nearby redwood forests. The structure housed a general merchandise store in front, a saloon at the rear and rooming accommodations upstairs. The structure lasted into the 1920's.

**Rheem Estate or Hacienda De Las Flores:** The Rheem Estate, designed by architect Clarence Tantau was constructed on 48 acres for the Rheem family. The main structure included 18 rooms, excluding bathrooms and is a Spanish styled hacienda. The pool house has additional bedrooms, changing rooms, and entertainment room with an upstairs projection room. The structure now serves as the Community Center of Moraga.

No additional resources have been previously recorded within the MCSP area.

## 4.M-2 REGULATORY SETTING

### National Register of Historic Places

The significance of cultural resources is evaluated under the criteria for listing in the National Register of Historic Places (NRHP), authorized under the National Historic Preservation Act of 1966, as amended. The criteria defined in 36 CFR 60.4 are as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

An integral part of assessing cultural resource significance, aside from applying the above criteria, is the physical integrity of the resource. Prior to assessing a resource's potential for listing in the NRHP, it is important to understand the seven kinds of integrity mentioned above. According to National Register Bulletin 15 (1984), How to Apply the National Register Criteria for Evaluation, the types of integrity are defined as follow:

- **Location** is the place where the historic property was constructed or the place where the historic event occurred;
- **Design** is the combination of elements that create the form, plan, space, structure, and style of a property;
- **Setting** is the physical environment of a historic property;
- **Materials** are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property;

- **Workmanship** is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- **Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time; and
- **Association** is the direct link between an important historic event or person and a historic property.

To qualify for listing in the NRHP, a property must be significant; that is, it must represent a significant part of the history, architecture, archeology, engineering, or culture of an area, and it must have the characteristics that make it a good representative of properties associated with that aspect of the past.

All properties change over time. It is not necessary for a property to retain all its historic physical features or characteristics to be eligible for the NRHP. The property must retain, however, the essential physical features that enable it to convey its historic identity. The essential physical features are those features that define both why a property is significant and when it was significant. A property that is significant for its historic association is eligible if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or persons. A property important for association with an event, historical pattern, or person ideally might retain some feature of all seven aspects of integrity. A basic integrity test for a property associated with an important event or person is whether a historical contemporary would recognize the property as it exists today (National Park Service 1984:6, 46, 48).

### California Environmental Quality Act

CEQA Guidelines Section 15064.5 includes provisions for significance criteria related to archaeological and historical resources. A significant archaeological or historic resource is defined as one which meets the criteria of the California Register of Historical Resources (CRHR), is included in a local register of historic resources, or is determined by the lead agency to be historically significant. A significant impact is characterized as a “substantial adverse change in the significance of a historical resource.”

Public Resource Code Section 5024.1 authorizes the establishment of the CRHR. Any identified cultural resources must, therefore, be evaluated against the CRHR criteria. In order to be determined eligible for the CRHR, a property must be significant at the local, state, or national level under one or more of the following four criteria, modeled after the NRHP criteria. To eligible for listing in the CRHR a resource must

1. be associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States;
2. be associated with the lives of persons important to the nation or to California's past;

3. embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possesses high artistic values; or
4. yield, or be likely to yield, information important to the prehistory or history of the state and the nation.

In addition to meeting one of the above criteria, a significant property must exhibit a measure of integrity. Properties eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historic properties and to convey the reasons for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association.

Public Resource Code Section 21083.2 governs the treatment of unique archaeological resources, defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” as meeting any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, appropriate mitigation measures shall be required to preserve the resource in-place and in an undisturbed state. Mitigation measures may include, but are not limited to:

1. planning construction to avoid the site,
2. deeding conservation easements, or
3. capping the site prior to construction.

If a resource is determined to be a “non-unique archaeological resource,” no further consideration of the resource by the lead agency is necessary.

The recommended phased approach can be utilized as areas are developed or utilized. Thereby, as areas are selected for development, project development proponents can undertake these studies as necessary to satisfy the needs of local agencies.

## **Town of Moraga Goals, Objectives and Policies**

The Moraga 2002 General Plan contains relevant goals and policies that address cultural and historic resources. The applicable goals, objectives and policies are listed below.

**Goal CD7. Historic Resources.** Preservation of historically significant buildings and sites as a valued part of the community's character and a link to its past.

Policy CD7.1. Designation of Historic Resources. Identify and protect buildings, sites and other resources in the community that give residents a tie with the past, which may include:

- a) Hacienda de las Flores
- b) Older buildings at Saint Mary's College
- c) Trees with historical significance
- d) Moraga Ranch
- e) Moraga Barn

Policy CD7.2. Historic Preservation. Promote the preservation and conservation of historic buildings and sites, providing incentives as appropriate for their retention and rehabilitation.

Policy CD7.3 Adjacent Sites. Ensure that adjacent infill development is complementary to designated historic buildings and sites.

Policy CD7.5 Landscaping in Historic Areas. Use landscaping to enhance the historic character of designated buildings, sites and districts, emphasizing the use of native and drought tolerant species.

Policy CD7.6 Public Information on Historic Resources and Preservation. Promote and support educational and informational programs regarding Moraga's history to help residents better understand and appreciate the Town's past and the historic resources that remain in the Town.

## Evaluation Criteria

Table 4.M-3 presents criteria for analysis of cultural resource impacts.

**Table 4.M-3**

### Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.M-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA § 15064.5?	Number of sites that meet the criteria of the California or National Register of Historical Resources affected by project activities	Greater than 0 sites adversely affected	CEQA Checklist V(a); CEQA §15064.5; PRC § 5024.1, §5031, and 21084.1
4.M-2. Will the Project cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA § 15064.5?	Sensitivity analysis	Greater than 0 projected locations adversely affected	CEQA Checklist V(b); CEQA §15064.5; PRC §5024.1, §5031, and 21084.1
4.M-3. Will the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Underground construction within geologic units with the potential to contain important fossils	Greater than 0 occurrences adversely affected	CEQA Checklist V(c); PRC §5097.5
4.M-4. Will the Project disturb any human remains, including those interred outside of formal cemeteries?	Number of sites affected by project activities	Greater than 0 sites adversely affected	CEQA Checklist V(d); CEQA §15064.5; PRC §5097.5

## 4.M-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 4.M-4 presents potential cultural resource impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for cultural resource conflicts is determined by the location of the project in proximity to cultural resources and the type of disturbance that would occur in relation to federal and state regulations protecting such resources. The discovery of buried or previously unknown cultural resources is the primary cultural resource concern for all the Alternatives.

**Table 4.M-4**

## Cultural Resource Impacts –All Alternatives

Impact	Point of Significance	Type of Impact <sup>1</sup>	Level of <sup>2</sup> Significance
4.M-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA § 15064.5?	Greater than 0 sites adversely affected	P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.M-2. Will the Project cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA § 15064.5?	Greater than 0 projected locations adversely affected	P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.M-3. Will the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Greater than 0 occurrences adversely affected	C, P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖
4.M-4. Will the Project disturb any human remains, including those interred outside of formal cemeteries?	Greater than 0 sites adversely affected	C, P	Proposed Project ⊖ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (339 Unit Alternative - GP Development Level) ⊖ Alternative 3 (400 Unit Alternative) ⊖ Alternative 4 (560 Unit Alternative) ⊖

Source: HBA 2008

Notes: 1. Type of Impact:  
C Construction2. Level of Significance:  
● Significant impact before and after mitigation

P Permanent

● Significant impact before mitigation; less than significant impact after mitigation  
○ Less than significant impact; no mitigation proposed  
== No impact

**Impact:** **4.M-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA § 15064.5?**

**Analysis:** *No Impact; No Project Alternative*

Under the No Project Alternative, there would be no change to existing conditions within the MCSP and therefore, no impacts to historic resources.

**Analysis:** *Potentially Significant Impact; Proposed Project and Action Alternatives*

As described under the setting section, there is a potentially significant historic structure within the MCSP area (Moraga Barn). Because of the age of other structures and uses within the MCSP area, it is also possible that other buildings (e.g., Moraga Ranch) and non-building sites could be added to the State's Historic Property Directory in the future. The MCSP and Action Alternatives propose expansion and renovation of the existing Moraga Ranch area, but do not provide a detailed development plan at this time. If the commercial development levels proposed in the MCSP are adopted, it is possible that new commercial development would be proposed in the Ranch. The expanded commercial uses of the Ranch would likely remodel or demolish resources that may be determined by the State to be eligible historical resources.

#### *Remodeling*

If a particular project to be developed under the MCSP would include remodeling an existing structure, the first inquiry would be whether the existing structure is included in the Historic Property Directory. The only structure within the MCSP that is on the Directory is the Moraga Barn, which has been recently remodeled. Therefore, it is unlikely that additional work will be proposed for this resource in the near future. If a structure is not on the Historic Property Directory, the next inquiry is whether the structure is 50 or more years old. If the existing structure is not at least 50 years old, it is not generally considered by the State to be a historical resource and remodeling would cause no impact.

#### *Demolition*

If a particular project to be developed under the MCSP would require demolition of an existing structure, the first inquiry would be whether the existing structure is included in the Historic Property Directory. Should the Moraga Barn be proposed for demolition, it would be considered a potentially significant impact that would require mitigation. If the structure to be demolished is not included in the Historic Property Directory, the next question is whether the structure is 50 or more years old. If not, demolition would likely cause no impact.

**Mitigation: 4.M-1: Protect Potential Historic Resources.**

The records search has revealed that less than five percent of the MCSP has been subjected to intensive pedestrian archaeological survey, and very limited historic architectural survey. It is recommended that a cultural resources survey of the entire MCSP be completed. Any previously recorded and newly recorded historic architectural and archaeological resources identified during the survey should be evaluated for inclusion in the National Register of Historic Places and the California Register of Historic Resources using the following evaluation criteria.

Prior to remodeling or demolishing any structure that is 50 or more years old, developers shall submit an assessment of the structure regarding its eligibility for listing to the Town planning staff. If the planning staff determines that the structure is potentially eligible for listing, or is a potential historic resource, then a site-specific analysis of the impact and feasible mitigation measures, including avoidance of the resource, shall be prepared as part of project review. The analysis will utilize significance criteria provided above under Section 4.M-2, Regulatory Setting.

**After****Mitigation: *Less than Significant Impact; Proposed Project and Action Alternatives***

Implementation of the mitigation measure above would reduce the potential for impacts to historic resources to a less than significant level.

**Impact: **4.M-2. Will the Project cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA § 15064.5?******Analysis: *No Impact; No Project Alternative***

Under the No Project Alternative, there would be no change to existing conditions within the MCSP and therefore, no impacts to archaeological resources.

**Analysis: *Potentially Significant Impact; Proposed Project and Action Alternatives***

There are no known archaeological sites within the MCSP area. However, as is described under Impact 4.M-1 above, specific sites for development under the MCSP have not all been surveyed because specific building development locations have not been identified. Therefore, it is possible that MCSP development could impact archaeological resources. If construction were proposed at the site of an archaeological resource identified during future survey, a site-specific analysis would be required to determine whether the site constituted a “unique archaeological resource” within the meaning of Public Resources Code Section 21083.2 or a historical resource within the meaning of Public Resources Code Section 21084.1, and if so, whether the site would be adversely affected, thus resulting in a significant impact.

In addition, it is possible that previously unknown prehistoric archaeological sites could be unearthed during excavation or earthmoving activities for a particular project. Therefore, future earthwork could cause a significant impact to a unique archaeological resource or a historical resource.

**Mitigation: 4.M-2. Protect Potential Archaeological Resources**

Prior to site development within previously undisturbed areas of the MCSP (e.g., areas that are not currently covered by pavement or existing structures), the developer shall prepare a site survey to look for potential archaeological resources. If a project proposed pursuant to the MCSP were sited on an identified archaeological site, further site-specific analysis will be required to determine whether a significant impact would occur. Site-specific mitigation shall be identified by the Town in accordance with the provisions of Section 21083.2 of the Public Resources Code.

Should previously unidentified historic or prehistoric archaeological resources be discovered during construction of MCSP development, the contractor shall cease work in the immediate area and the Town shall be contacted. The Town shall assess the significance of the find and make mitigation recommendations (e.g., manual excavation of the immediate area), if warranted. Construction monitoring shall be conducted at any time ground-disturbing activities (greater than 12 inches in depth) are taking place in the immediate vicinity of potentially significant archaeological resource discovered as described above. This includes building foundation demolition and construction, roadway construction, and work within the immediate vicinity of the Laguna Creek riparian habitat.

In the event that human skeletal remains are encountered, the developer shall immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code and the County Coordinator of Indian affairs. No further disturbance of the site may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts. No further disturbance of the artifacts may be made except in compliance with all applicable federal, state, and local laws regarding Native American burials and artifacts.

**After**

**Mitigation: Less Than Significant Impact; Proposed Project and Action Alternatives**

Implementation of the mitigation measure above would reduce the potential for impacts to archaeological resources to a less than significant level.

**Impact:** **4.M-3. Will the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**Analysis:** *No Impact; No Project Alternative*

Under the No Project Alternative, there would be no change to existing conditions within the MCSP and therefore, no impacts to paleontological resources or unique geologic features.

**Analysis:** *Potentially Significant Impact; Proposed Project and Action Alternatives*

No known paleontological resources or unique geological features are known to occur within the MCSP area. However, it is possible that excavation would uncover paleontological resources. This impact is therefore considered to be potentially significant.

**Mitigation:** **4.M-3. Protect Undiscovered Paleontological Materials**

In the event that fossilized or unfossilized shell or bone is uncovered during any earth-disturbing operation resulting from development under the MCSP, contractors shall stop work in the immediate area of the find and notify the Town building inspector assigned to the project. Town staff shall visit the site and make recommendations for treatment of the find (including consultation with a paleontologist and excavation, if warranted), which would be sent to the Town Building Inspection Office and the Town Planning Office. If a fossil find is confirmed, it will be recorded with the USGS and curated in an appropriate repository.

**After**

**Mitigation:** *Less Than Significant Impact; Proposed Project and Action Alternatives*

Implementation of the mitigation measure above would reduce the potential for impacts to potential paleontological resources to a less than significant level.

**Impact:** **4.M-4. Will the Project disturb any human remains, including those interred outside of formal cemeteries?**

**Analysis:** *No Impact; No Project Alternative*

Under the No Project Alternative, there would be no change to existing conditions within the MCSP and therefore, no chance or disturbing any human remains.

**Analysis:** *Potentially Significant Impact; Proposed Project and Action Alternatives*

Although highly unlikely, there is the possibility that human remains, including Native American burials, will be encountered during ground disturbing activities. This impact is therefore considered potentially significant.

**Mitigation: 4.M-2. Protect Potential Archaeological Resources**

See mitigation measure 4.M-2 above.

**After**

**Mitigation: Less Than Significant Impact; Proposed Project and Action Alternatives**

Implementation of mitigation measure 4.M-2 would reduce the potential for impacts to human remains to a less than significant level.

## **4.M-4 CUMULATIVE IMPACTS**

There are no significant impacts identified for the MCSP and Action Alternatives that cannot be mitigated to a less than significant level with survey, evaluation, avoidance, and if necessary, proper treatment of resources. There are no other known projects within the MCSP area that could affect cultural resources. Other projects in the vicinity of the MCSP area may impact known or unknown cultural resources within the Town. However, based upon the type of resources (site specific locations) included within the Town of Moraga, it is unlikely that the Proposed Project or Action Alternatives would create additional impacts to these resources.

## **4.M-5 PREPARERS AND REFERENCES**

### **Preparers**

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Rob Brueck, Hauge Brueck Associates

### **Reviewers**

Christy Consolini, Hauge Brueck Associates

### **References**

Directory of Properties in the Historic Property Data File for Contra Costa County (April 2008), which includes properties evaluated for the National Register of Historic Places, California Register of Historical Resources, and various other state and local registers;

The California Inventory of Historic Resources Inventory (March 2008);

Historic American Building Survey (March 2008);

The General Land Office Plat of Oakland East (T1S; R2W; sections 18 and 19);

Five Views: An Ethnic Sites Survey for California (1988); California Historical Landmarks (1996); and

Historic Spots in California (1990).

**4****ENVIRONMENTAL ANALYSIS**

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Each topic section (i.e., Section 4.A – Land Use) in this Chapter is organized according to the following format:

**SETTING**

The Environmental Setting describes the existing conditions as they relate to the attributes of the environment that may be affected by the Project. Pursuant to Section 15125 of the state CEQA Guidelines, the environmental settings have been prepared at a level of detail necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

**EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE**

This section identifies the relevant state, federal, and local environmental standards (i.e., water quality standards, air quality standards, zoning provisions, etc.) and other criteria by which a change in the environment can be assessed.

**IMPACTS AND MITIGATION MEASURES**

The impact analyses in this chapter describe anticipated changes in the environment from construction and operation of the development that would be permitted by the proposed Moraga Center Specific Plan. The impact analyses have been prepared to comply with Section 15143 of the CEQA Guidelines, which states that the “significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence.” The level of significance is identified for each impact based on a comparison with the impact evaluation criteria. Where the project results in impacts that are considered significant with respect to the impact evaluation criteria, mitigation measures are proposed to avoid or minimize the impact. Where impacts cannot be reduced to a level that is less than significant, the impact is identified as significant and unavoidable.

**CUMULATIVE IMPACTS**

Cumulative effects are discussed for each topic section when the project’s incremental effect is “cumulatively considerable,” as defined in section 15065(c) of the CEQA Guidelines. “Cumulatively considerable” means that the incremental effects of the project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. A cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts.

**MORAGA CENTER SPECIFIC PLAN**

DRAFT ENVIRONMENTAL IMPACT REPORT

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## 5 CEQA REQUIRED ASSESSMENTS

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### 5.A SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL EFFECTS

Section 2100(b)(2)(A) of CEQA requires that an EIR identify any significant environmental effects that cannot be avoided if the project is implemented. Significant unavoidable impacts are identified in Section 4 of this EIR, Environmental Analysis, as those impacts that remain significant after implementation of mitigation. Although the project has the potential to result in a number of significant environmental impacts, most of these can be avoided through the adoption of appropriate mitigation measures that will reduce those effects to a less than significant level. Significant and unavoidable impacts of the Proposed Project (and each of the Action Alternatives) include the following:

- 4.F-1. Adverse vehicular impacts on Routes of Regional Significance
- 4.F-4. Vehicular impacts for signalized intersections in Lafayette
- 4.F-6. Vehicular impacts for signalized intersections in Orinda
- 4.G-4. Net increase of O<sub>3</sub> and PM<sub>10</sub> for which the project region is non-attainment
- 4.G-5. Significant CO impact to local air quality
- 4.G-7. Increase in greenhouse gas emissions

In order to approve the Proposed Project or an Action Alternative, the Town of Moraga must make findings that justify the approval of the Proposed Project or an Action Alternative that has significant effects that are not substantially lessened or avoided (CEQA Guidelines 15091 (a)). The Town may, after adopting the proper findings, approve the Proposed Project if it first adopts a statement of overriding considerations setting forth specific reasons for its determination that the project's "benefits" render "acceptable" its "unavoidable adverse environmental effects" (CEQA Guidelines 15093 (a-b)).

For the 2002 General Plan EIR, the Town adopted Resolution 21-2002 of June 4, 2002 that included findings and a statement of overriding considerations for unavoidable transportation impacts to Highway 24, and intersections in Orinda and Lafayette.

### 5.B SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant irreversible changes that would result from project implementation. Section 15126.2(c) of CEQA provides guidance as to what sorts of changes might be considered irreversible. Such changes include use of nonrenewable resources, commitment of future generations to similar uses, and environmental accidents that could occur as a result of the project.

The Proposed Project would involve construction activities that commit non-renewable resources including fuels, construction materials and land. Once constructed, project facilities would continue to use energy. The precise acreage of land that would be used by the project cannot be determined as building sites and sizes have not been determined.

However, approximately 90 acres of under-developed or vacant land are located within the MCSP area. Much of the development associated with the MCSP would be infill on developed areas that have already been committed to retail or commercial uses, and further development would not be considered a significant change. However, once buildings are constructed in the area, the reversion to open space is very unlikely.

## 5.C CUMULATIVE IMPACTS

Cumulative impacts are defined as “two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Section 15130 of the CEQA Guidelines states that an EIR must discuss cumulative impacts when they are significant. In the case of the Proposed Project, cumulative impacts could result from the project impacts in combination with those from other projects within and near the Town of Moraga. The analysis of cumulative impacts of the project and surrounding local and subregional development are presented in Chapter 4 under each issue area. If significant cumulative impacts are identified, mitigation measures have been recommended to reduce impact levels if available.

## 5.D GROWTH INDUCING IMPACTS OF THE PROPOSED PROJECT

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss “...the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.” Growth can be induced in a number of ways, including through the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The impact discussion (4.B-2) in Chapter 4.B “Population, Employment and Housing” discusses the balance between population, employment and housing and the additional impact that might be induced by the Proposed Project.

## 5.E ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 5-1 compares the potential environmental impacts of the Proposed Project and each of the Alternatives. Evaluation of the Proposed Project and Alternatives indicates that the environmentally superior alternative is the No Project Alternative (Alternative 1), which assumes the existing environment will remain unchanged. This alternative would eliminate impacts on visual resources, transportation, habitat disturbance, associated with new land disturbance and construction related to new development. However, this alternative would not be consistent with the Moraga 2002 General Plan and would still incur several significant impacts associated with existing water quality problems from erosion and sedimentation and failure to provide sites for affordable housing. Further, the No Project Alternative will not meet the purpose and needs for the Proposed Project, and when considered in the context of the Town of Moraga General Plan goals and policies, is not a reasonable or practical alternative.

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
<b>4.A LAND USE</b>					
4.A-1. Is the Project consistent with the 2002 Town of Moraga General Plan adopted for the purpose of avoiding, minimizing, or monitoring environmental effects?	Inconsistent with LU1.2 and LU3.3 - residential densities	Inconsistent with H2.1 – Housing Variety, H2.3 – Fair Share Housing, H2.6 – Density Bonus, H2.8 – Affordable Housing Partnerships, H3 – Special Housing Needs, and OS2.3 – Natural Carrying Capacity	Inconsistent with LU1.2 and LU3.3 – residential densities, LU3.1.c – Housing, LU3.1.1 – Orchard Preservation, H2.1 – Housing Variety, H2.3 – Fair Share Housing, H2.6 – Density Bonus, H2.8 – Affordable Housing Partnerships, H3 – Special Housing Needs, C4.4 – Trip Reduction Strategies	Same as Proposed Project	Same as Proposed Project
4.A-2. Will the Project result in conflicts between adjacent land uses (i.e., higher density versus lower density residential and residential versus retail/mixed use/office)?	Potential conflicts in sub-areas 4 (Camino Ricardo), 14 (Country Club/School Street), and 15 (Moraga Way/Moraga Road)	None	None	Potential conflicts in sub-area 14 (Country Club/School Street)	Potential conflicts in sub-area 14 (Country Club/School Street)
4.A-3. Will the Project substantially increase densities?	Residential density up to 24 du/ac	None	None	Residential density up to 20 du/ac	Residential density up to 20 du/ac

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.A-4. Convert or result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or conflict with a Williamson Act contract	None	None	None	None	None
<b>4.B POPULATION, EMPLOYMENT AND HOUSING</b>					
4.B-1. Will the Project displace substantial numbers of existing dwelling units or people, particularly units occupied by low- or moderate-income households, requiring the construction of replacement housing elsewhere?	None	None	None	None	None
4.B-2. Will the Project create a demand for housing or induce population growth in excess of growth anticipated in the Moraga 2002 General Plan either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	Up to 1,614 increase in population	None	Up to 1,153 increase in population	Up to 928 increase in population	Up to 1,288 increase in population

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.B-3. Is the Project consistent with adopted goals and policies, related to population, employment, and housing.	Provides up to 400 affordable and 320 moderate/above moderate housing units	Does not meet affordable (148) and moderate/above moderate (159) housing goals	Provides up to 339 moderate/above moderate housing units. Does not meet affordable (148) housing goals	Provides up to 250 affordable and 150 moderate/above moderate housing units	Provides up to 330 affordable and 230 moderate/above moderate housing units
<b>4.C GEOLOGY, SOILS AND SEISMICITY</b>					
4.C-1. Will the Project expose people or structures to major geologic hazards, such as strong seismic ground shaking, or seismic related ground failure?	Allows new structures: up to 720 housing units, 90,000 square feet of commercial, 50,000 square feet of office and a community center	None	Allows new structures: up to 339 housing units, 16,000 square feet of commercial, and 38,000 square feet of office	Allows new structures: up to 400 housing units, 50,000 square feet of commercial, 50,000 square feet of office and a community center	Allows new structures: up to 560 housing units, 90,000 square feet of commercial, 50,000 square feet of office and a community center
4.C-2. Will the Project result in damage caused by unstable slope conditions (e.g., landslides, lateral spreading, subsidence, liquefaction, collapse, or soil erosion)?	Low Risk	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.C-3. Will the Project be located on expansive or corrosive soil, creating substantial risks to life or property?	High Risk	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.C-4. Will the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

**4.D HYDROLOGY, SURFACE WATER AND GROUNDWATER QUALITY**

4.D-1. Will the Project degrade surface water quality or violate any water quality standards or waste discharge requirements?	Up to 90 acres of new ground disturbance	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.D-2. Will the Project substantially deplete groundwater supplies or interfere with groundwater recharge?	Up to 90 acres of new ground disturbance	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.D-3. Will the Project substantially alter existing drainage patterns resulting in substantial erosion, sedimentation, or flooding in new areas, or alter storm runoff such that storm drainage capacity would be exceeded?	Up to 90 acres of new ground disturbance	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.D-4. Will the Project expose people or structures to inundation by seiche, tsunami, or mudflow?	None	None	None	None	None
4.D-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam?	None	None	None	None	None
4.D-6. Will the Project place structures within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	Includes a roadway and pedestrian bridge crossing within the flood hazard area	None	Includes a roadway and pedestrian bridge crossing within the flood hazard area	Includes a roadway and pedestrian bridge crossing within the flood hazard area	Includes a roadway and pedestrian bridge crossing within the flood hazard area
4.D-7. Will the Project expose people or structures to increased potential for flooding, bank erosion and/or sedimentation?	Up to 90 acres of new ground disturbance	Existing erosion and sedimentation problems would continue	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.D-8. Will construction of the Project result in degradation of surface water quality?	Up to 90 acres of new ground disturbance	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
<b>4.E OPEN SPACE, VISUAL RESOURCES AND RECREATION</b>					
4.E-1. Will the Project result in loss of potential public open space?	16.8 acre Laguna Creek riparian corridor will be maintained in natural condition	None	16.8 acre Laguna Creek riparian corridor will be maintained in natural condition	16.8 acre Laguna Creek riparian corridor will be maintained in natural condition	16.8 acre Laguna Creek riparian corridor will be maintained in natural condition
4.E-2. Will the Project have a substantial adverse effect on a scenic vista or substantially damage scenic resources (e.g., natural landforms, trees, rock outcrops and historic buildings along a scenic highway)?	Fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	None	Fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	Portion of fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	Majority of fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked
4.E-3. Will the Project substantially degrade the existing visual quality of the site and its surroundings?	Fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	None	Fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	Portion of fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked	Majority of fallow orchards will be replaced with housing and existing ridgeline views along Moraga Way and Road would be blocked
4.E-4. Will the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	New building and street lighting	None	New building and street lighting	New building and street lighting	New building and street lighting

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.E-5. Will the Project create additional demand for recreation facilities such that new facilities need to be constructed to maintain the existing level of service?	Demand for up to 4.8 acres of new recreational uses	None	Demand for up to 3.5 acres of new recreational uses	Demand for up to 2.8 acres of new recreational uses	Demand for up to 3.9 acres of new recreational uses
<b>4.F TRANSPORTATION, CIRCULATION AND PARKING</b>					
4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?	Adds AM and PM Peak Hour trips on SR 24 (up to 30), Pleasant Hill Road (up to 4) and Camino Pablo (up to 6)	None	Adds AM and PM Peak Hour trips on SR 24 (up to 38), Pleasant Hill Road (up to 5) and Camino Pablo (up to 2)	Adds AM and PM Peak Hour trips on SR 24 (up to 17), Pleasant Hill Road (up to 2) and Camino Pablo (up to 5)	Adds AM and PM Peak Hour trips on SR 24 (up to 24), Pleasant Hill Road (up to 3) and Camino Pablo (up to 6)
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	None	None	None	None	None
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	Worsens LOS at Moraga Road/Corliss Drive to E in the AM Peak Hour	None	Worsens LOS at Moraga Road/Corliss Drive to D in the AM Peak Hour	Worsens LOS at Moraga Road/Corliss Drive to D in the AM Peak Hour	Worsens LOS at Moraga Road/Corliss Drive to E in the AM Peak Hour
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	Worsens existing LOS of E at Moraga Road/Moraga Blvd and Moraga Road/Brook Street intersections	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	Worsens LOS at four intersections that meet traffic signal warrants (Deer Hill Drive/Oak Hill Road, Glenside Drive/Reliez Station Road, Glenside Drive/Burton Drive, and Pleasant Hill Road/Olympic Boulevard)	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	Worsens existing LOS at Camino Pablo/Brookwood, Glorietta Blvd/Moraga Way and Ivy Drive/Moraga Way	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	None	None	None	None	None
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	None	None	None	None	None
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	New development will increase hazards at existing access points	None	New development will increase hazards at existing access points	New development will increase hazards at existing access points	New development will increase hazards at existing access points

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	Community Center Site “B” will create unsafe crossing location on Moraga Road	None	None	Community Center Site “B” will create unsafe crossing location on Moraga Road	Community Center Site “B” will create unsafe crossing location on Moraga Road
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	New development will increase demand for new parking	None	New development will increase demand for new parking	New development will increase demand for new parking	New development will increase demand for new parking
<b>4.G AIR QUALITY</b>					
4.G-1. Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Construction emissions may impact sensitive receptors (e.g. residential units)	None	Construction emissions may impact sensitive receptors (e.g. residential units)	Construction emissions may impact sensitive receptors (e.g. residential units)	Construction emissions may impact sensitive receptors (e.g. residential units)
4.G-2. Will the Project conflict with or obstruct implementation of the applicable Clean Air Plan?	None	None	None	None	None
4.G-3. Is the Project consistent with the Clean Air Plan population and Vehicle Miles Traveled (VMT) assumptions and Transportation Control Plans (TCMs)?	Consistent	Consistent	Consistent	Consistent	Consistent

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.G-4. Will the Project result in a substantial net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Exceeds BAAQMD thresholds for ROG, NOx, CO and PM10	None	Exceeds BAAQMD thresholds CO	Exceeds BAAQMD thresholds for ROG, CO and PM10	Exceeds BAAQMD thresholds for ROG, NOx, CO and PM10
4.G-5. Will the Project result in a significant impact to local air quality?	Worsens CO concentrations at intersections with poor LOS, including: Camino Pablo/Brookwood Road, Glorietta Blvd/Moraga Way, Ivy Drive/Moraga Way, Deer Hill Drive/Oak Hill Road, Moraga Road/Moraga Blvd, Moraga Road/Brook Street, Glenside Drive/Reliez Station Road, Glenside Drive/Burton Drive, Pleasant Hill Road/Olympic Blvd, Moraga Road/Corliss Drive	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.G-6. Does the Project provide buffer zones around existing and proposed land uses that emit odors and/or toxic air contaminants?	None	None	None	None	None
4.G-7. Will the project result in substantial greenhouse gas emissions and/or substantially contribute to global warming?	Greenhouse gas (GHG) emissions increase approximately 13,100 tons per year from proposed housing, commercial and office development	None	Greenhouse gas (GHG) emissions increase approximately 8,700 tons per year from proposed housing, commercial and office development	Greenhouse gas (GHG) emissions increase approximately 11,700 tons per year from proposed housing, commercial and office development	Greenhouse gas (GHG) emissions increase approximately 14,800 tons per year from proposed housing, commercial and office development

**4.H NOISE**

4.H-1. Will operation of the Project expose people to high noise levels or ground-borne vibration?	Construction equipment will create vibration levels of up to 94 VdB (e.g., Vibratory Compactor/Roller)	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.H-2. Will Project construction expose people to high noise levels or ground borne vibration?	Construction equipment will create noise levels of up to 88 dB at 50 feet (e.g., Heavy Trucks)	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.H-3. Will Project traffic result in traffic noise level increases at existing land uses in the project area?	Increased traffic noise levels of up to 1 dB	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.H-4. Will Project traffic result in traffic noise levels at proposed land uses which will exceed the acceptable exterior noise level standards?	New residential units would be exposed to traffic noise levels over the Moraga standard of 60 dB Ldn	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.H-5. Will the Development of Commercial, Retail and Office Uses Result in Noise Sources which Impact Existing and Future Noise-Sensitive Uses in the Project Area?	New commercial and office uses could generate noise levels that are incompatible with mixed use residential uses	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
<b>4.I BIOLOGICAL RESOURCES</b>					
4.I-1. Will the Project cause a loss of individuals or habitat of endangered, threatened, or rare wildlife species?	Bridge and culvert construction will affect aquatic and riparian habitats, and will remove native trees within the central coast live oak riparian woodland	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.I-2. Will the Project cause a loss of rare plant species?	Bridge and culvert construction may affect rare plants located within the central coast live oak riparian woodland	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.I-3. Will the Project cause a loss of active raptor nests, migratory bird nests, or native wildlife nursery sites?	Bridge, culvert and housing construction may affect bird nests located within the central coast live oak riparian woodland and fallow orchards	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.I-4. Will the Project cause a permanent loss of natural vegetation or habitat for sensitive wildlife species?	Bridge, culvert and housing construction may affect habitat used for sensitive wildlife species located within the central coast live oak riparian woodland and fallow orchards	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.I-5. Will the Project cause a permanent loss of sensitive native plant communities?	Bridge and culvert construction will cause a permanent loss of a small amount of central coast live oak riparian woodland	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.I-6. Will the Project result in a substantial loss of native vegetation or wildlife populations?	Bridge and culvert construction will cause a permanent loss of a small amount of native vegetation (e.g. central coast live oak riparian woodland)	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.I-7. Will the Project substantially block or disrupt wildlife migration or travel corridors?	Bridge and culvert construction will cause a new disruption to the Laguna Creek travel corridor	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.I-8 Will the Project conflict with local policies or ordinances for the protection of biological resources?	Consistent	Consistent	Consistent	Consistent	Consistent
4.I-9. Will the Project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?	None	None	None	None	None
4.I-10. Will the Project result in a net loss of wetlands, streams or other waters of the U.S.?	Bridge and culvert construction will cause a loss of wetland habitat	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
<b>4.J PUBLIC UTILITIES AND HAZARDOUS MATERIALS</b>					
4.J-1. Will the Project increase demand for water, wastewater treatment and disposal, solid waste or hazardous waste disposal that accepted service standards are not maintained and/or new facilities are required to maintain acceptable service standards?	Increased water demand of 329,000 gallons per day; increased wastewater demand of 119,000 gallons per day; increased solid waste generation	None	Less than Proposed Project	Less than Proposed Project	Less than Proposed Project
4.J-2. Will the Project create a significant hazard to the public or the environment through the routine transport, use, disposal of, or reasonably foreseeable upset and accidental release of hazardous materials?	None	None	None	None	None
4.J-3. Will the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within $\frac{1}{4}$ - mile of an existing or proposed school?	None	None	None	None	None

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.J-4. Will the Project be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5, and, as a result, would it create a significant hazard to the public or the environment?	None	None	None	None	None
4.J-5. Will the Project expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?	None	None	None	None	None
<b>4.K SCHOOLS</b>					
4.K-1. Will the Project increase demand for schools or libraries to such a degree that accepted service standards are not maintained and new facilities are required?	Up to 133 new elementary, 118 new intermediate, and 113 new high school students	None	Up to 100 new elementary, 89 new intermediate, and 85 new high school students	Up to 79 new elementary, 70 new intermediate, and 66 new high school students	Up to 105 new elementary, 93 new intermediate, and 88 new high school students

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
4.K-2. Will the Project conflict with local policies for providing public school facilities?	Consistent	Consistent	Consistent	Consistent	Consistent
<b>4.L PUBLIC SERVICES</b>					
4.L-1. Will the Project increase demand for public services to such a degree that accepted service standards are not maintained and new facilities are required to maintain service standards for the following:					
a. Police protection?	Up to 1,614 new residents create a demand for up to 2 more officers	None	Up to 1,153 new residents create a demand for more than 1 officer	Up to 928 new residents create a demand for up to 1 more officer	Up to 1,288 new residents create a demand for more than 1 officer
b. Fire protection?	Development within 1.5 miles of an existing MOFD station	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.L-2. Will the Project impair or physically interfere with an adopted emergency response or evacuation plan?	New access will comply with emergency response requirements	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

**Table 5-1**

## Comparison of Potential Impacts (Proposed Project and Alternatives)

<b>Potential Impacts</b>	<b>Proposed Project</b>	<b>Alternative</b>			
		<b>1 (No Project)</b>	<b>2 (GP Dev. Level)</b>	<b>3 (400 Unit)</b>	<b>4 (560 Unit)</b>
<b>4.M CULTURAL RESOURCES</b>					
4.M-1. Will the project cause a substantial adverse change in the significance of a historical resource as defined in CEQA § 15064.5?	Expansion and Renovation of Moraga Ranch may impact an eligible resource	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.M-2. Will the Project cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA § 15064.5?	Excavation for proposed development may impact unknown archaeological resources	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.M-3. Will the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Excavation for proposed development may impact unknown paleontological resources	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
4.M-4. Will the Project disturb any human remains, including those interred outside of formal cemeteries?	Excavation for proposed development may impact human remains interred outside of formal cemeteries	None	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

Source: HBA, 2008

As is required in the CEQA Guidelines Subparagraph 15126.6(e)(2), when the No Project Alternative is determined to be the environmentally superior alternative, the EIR shall identify an environmentally superior alternative from the other alternatives. Of the Action alternatives, the two reduced development alternatives (Alternatives 3 – 400 Units and 4 – 560 Units) would not avoid all significant impacts associated with the Proposed Project, but would lessen many impacts compared to the Proposed Project. As such, the environmentally superior alternative is considered to be Alternative 3 (400 Units) with appropriate mitigation measures as described for the Proposed Project, including:

- Prepare geologic hazard evaluations
- Conduct slope stability assessments
- Utilize appropriate foundations for expansive and corrosive soils
- Prepare master drainage plan
- Prepare Laguna Creek greenway protection, maintenance and monitoring program
- Conduct groundwater recharge study
- Capture and infiltrate runoff
- Maintain peak runoff at pre-project conditions
- Protect water quality
- Require internal view corridors
- Light and glare minimization
- Install traffic signals (Corliss Drive/Moraga Way, Deer Hill Drive/Oak Hill Road, Glenside Drive/Reliez Station Road, Glenside Drive/Burton Drive, and Pleasant Hill Road/Olympic Boulevard)
- Enhance transit service and/or reduce community center program
- Ensure adequate internal circulation within MCSP
- Reduce vehicular conflicts with bicycles and pedestrians
- Provide an enhanced pedestrian crossing between community center site “B” and the Moraga Commons
- Provide adequate parking
- Reduce construction related dust and air emissions

- Reduce energy consumption to lessen ozone emissions and greenhouse gas emissions
- Implement noise control measures during construction
- Implement noise control measures for new residential development
- Implement noise control measures for new commercial/office development
- Conduct pre-construction wildlife surveys
- Protect wetlands and other waters of the United States
- Collect impact fees for Public Services
- Prepare fire protection plan
- Protect historic and archaeological resources

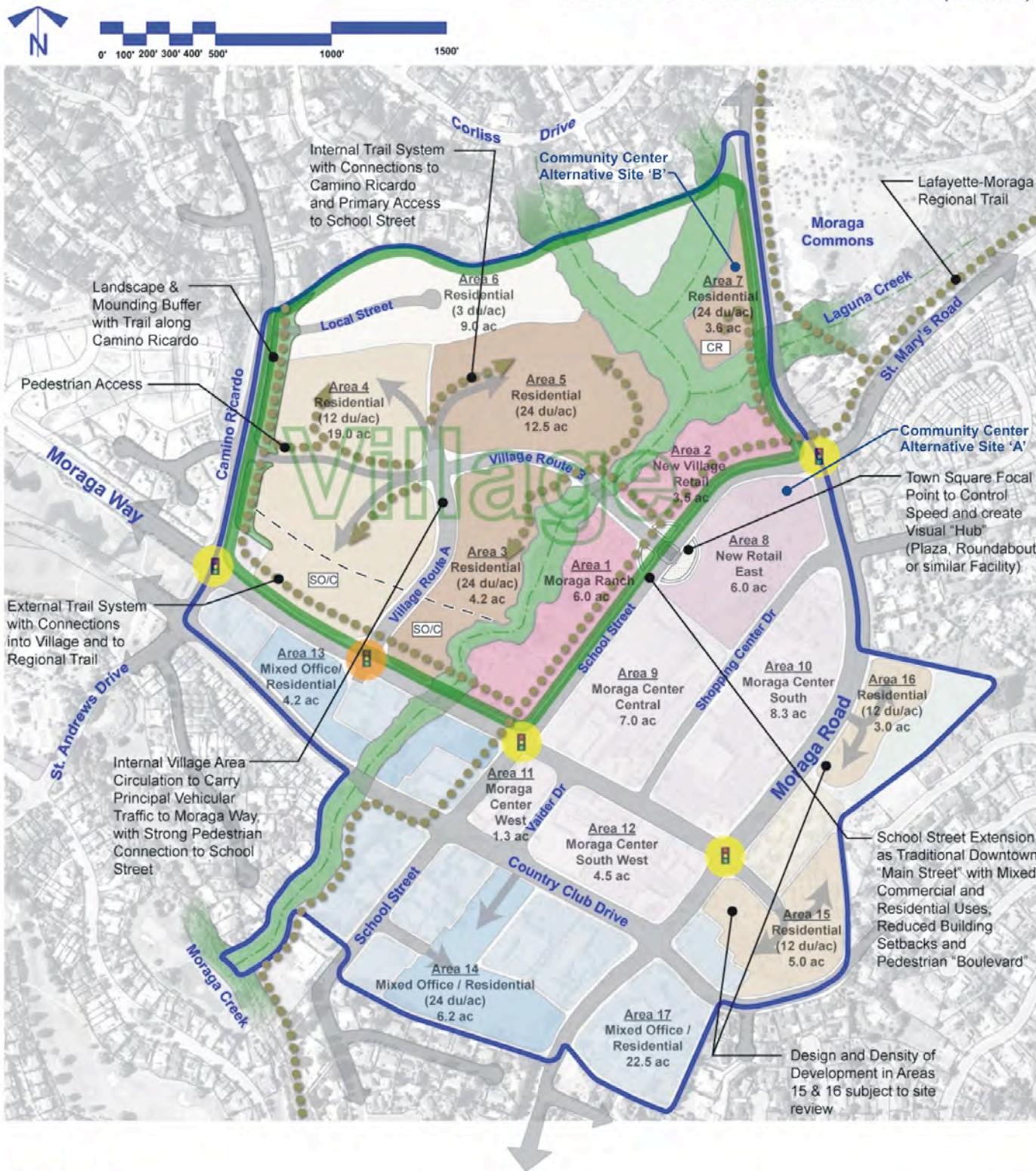
Collectively, the reduced development levels of Alternative 3 (400 Units) and the proposed mitigation measures listed above would avoid or substantially lessen significant impacts identified for the Proposed Project. The reduced impacts include less total ground disturbance (e.g., less impact to water quality, hydrology, wildlife habitats, visual resources), less population growth (e.g., less impact to public services and utility providers), and less traffic generation (e.g., less impact on local roadways, intersections, and regional roadways through other jurisdictions).

## 5.F ALTERNATIVES CONSIDERED AND REJECTED

During the development of the Proposed Project description, a range of residential and non-residential development levels were investigated to determine their impacts on peak hour traffic levels predicted in the Moraga 2002 General Plan EIR analysis. These conceptual development levels were investigated in a report prepared by Fehr & Peers Associates entitled “Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns”, December 2006. This report is included in Appendix D. Alternative development levels studied in the December 2006 report that would increase peak hour traffic levels above those levels predicted for the MCSP area in the 2002 General Plan EIR were rejected from further consideration in this EIR.

# MORAGA CENTER SPECIFIC PLAN

Illustrative Land Use and Circulation Plan (05.30.07)



## LEGEND

- Community Commercial
- Mixed Commercial / Residential (12-24 du/ac)
- Residential (12-24 du/ac)
- Residential (6-12 du/ac)
- Residential (3-6 du/ac)
- Public Facilities
- Open Space
- Suburban Office / Residential

- Trail System
- Village Policy Area
- Modified Signal
- Approximate Signal & Intersection Location
- Creek & Setback
- SO/C Residential Base Density with Suburban Office/Commercial Overlay
- CR Residential Base Density with Commercial Recreation Overlay

Note: Acreages shown for 17 sub-areas reflect usable land area. See Land Use Summary Table for additional details. Specific Plan Land Use Element to provide policy on mixed-use development. Aggregate development totals to be consistent with Table 1. All roadways and improvements approximate in location.

Figure 2-2: MCSP



**VIEW-01 EXISTING**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP



**VIEW-01 PROPOSED**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP  
FINAL 05/05/2008



**VIEW-01 EXISTING**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP



**VIEW-01 PROPOSED**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP  
FINAL 05/05/2008



**VIEW-02 EXISTING**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP



**VIEW-02 PROPOSED**

DIGITAL IMAGING STUDIO AT DAHLIN GROUP  
FINAL 05/05/2008