
AIR QUALITY

SETTING

Information in this section is based primarily on the *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Project and Plans* (December 1999), prepared by the Bay Area Air Quality Management District (BAAQMD); Bay Area Pollutions Summaries 2002 through 2006 (BAAQMD), The City of San Rafael General Plan 2020, and the Traffic Impact Analysis prepared by Fehr & Peers (September 7, 2007) for this Project. This section focuses on potential short-term air quality impacts associated with construction activity, in addition to long-term local and regional air quality impacts associated with the proposed Project.

EXISTING CLIMATE AND AIR QUALITY

San Francisco Bay Area Air Basin (Basin)

The California Air Resources Board (CARB) divides the state into air basins that share similar meteorological and topographical features. The proposed Project is located within the San Francisco Bay Area Air Basin (Basin). This Basin includes San Mateo, Santa Clara, Alameda, Contra Costa, Napa and Marin counties.

Basin Attainment Status

An attainment status is established for criteria pollutants within the air basin. Attainment is achieved when the area meets the appropriate air quality standard for a given pollutant. If the standard for a given pollutant is exceeded within the air basin, the basin is described as being in non-attainment for that pollutant. The Basin has been designated as an attainment area for nitrogen oxides (NO_x) and sulfur oxides (SO_x) for both State and Federal Standards. The Basin is designated as a non-attainment area for ozone (O₃) and particulate matter (PM₁₀) under both Federal and State standards; refer to **Table 6-1**, San Francisco Basin Ambient Air Quality Classification.

**TABLE 6-1:
SAN FRANCISCO BASIN AMBIENT AIR QUALITY CLASSIFICATIONS**

Pollutant	State	Federal
Ozone (O ₃) (1 hour standard)	Non-Attainment	NA ³
Ozone (O ₃) (8 hour standard)	Non-Attainment ²	Non-Attainment ¹
Particulate Matter <10 microns (PM ₁₀)	Non-Attainment ⁴	Unclassified
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Oxides (NO _x)	Attainment	Attainment
Sulfur Oxides (SO _x)	Attainment	Attainment

1. In June 2004, the Basin was designated as a marginal nonattainment area of the national 8-hour ozone standard.

2. The State standard of 8-hour ozone was established by the California Air Resources Board on April 28, 2005 and became effective May 17, 2006.

3. The national 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005.

4. In June 2002, CARB established new annual standards for PM_{2.5} and PM₁₀.

Source: Bay Area Air Quality Management District, http://www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, updated January 4, 2007.

Marin County

The proposed Project is located within the Marin County sector of the Basin. Marin County (Marin) is bounded on the west by the Pacific Ocean, on the east by San Pablo Bay, on the south by the Golden Gate and on the north by the Petaluma Gap. Most of Marin's population lives in the eastern part of the county, in small sheltered valleys. These valleys function like miniature air basins. Although there are a few mountains above 1,500 feet, most of the terrain is only 800 to 1,000 feet high, which usually is not high enough to block the marine layer. Because of the wedge shape of the County, northeast Marin is further from the ocean than is the southeastern section. This extra distance from the ocean allows the marine air to be moderated by bayside conditions as it travels to northeastern Marin. In southern Marin, the distance from the ocean is short and elevations are lower, resulting in a high incidence of maritime air in that area.

Wind speeds are highest along the west coast of Marin, averaging approximately 8 to 10 miles per hour. The complex terrain in central Marin creates sufficient friction to slow the airflow. At Hamilton Air Force Base, in Novato, the annual average wind speeds are only 5 mph. The prevailing wind directions throughout Marin are generally from the northwest.

In the summer months, areas along the coast are usually subject to onshore movement of cool marine air. In the winter, proximity to the ocean keeps the coastal regions relatively warm, with temperatures varying little throughout the year. Coastal temperatures are usually in the high-50's in the winter and the low-60's in the summer. The warmest months are September and October.

The eastern side of Marin has warmer weather than the western side because of its distance from the ocean and because the hills that separate eastern Marin from western Marin

occasionally block the flow of the marine air. The temperatures of cities next to the Bay are moderated by the cooling effect of the Bay in the summer and the warming effect of the Bay in the summer and the warming effect of the Bay in the winter. San Rafael experiences average maximum summer temperatures in the low-80's and average minimum winter temperatures in the low-40's.

REGULATORY SETTING

Regulatory oversight for air quality in the Basin rests with the Bay Area Air Quality Management District (BAAQMD) at the regional level, the California Air Resources Board (CARB) at the State level, and the U.S. Environmental Protection Agency (EPA) Region IX office at the Federal level.

U.S. Environmental Protection Agency

The principal air quality regulatory mechanism on the Federal level is the Federal Clean Air Act (FCAA) and, in particular, the 1990 amendments to the FCAA and the National Ambient Air Quality Standards (NAAQS) that it establishes. These standards identify levels of air quality for “criteria” pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂, which is a form of nitrogen oxides [NO_x]), sulfur dioxide (SO₂, which is a form of sulfur oxides [SO_x]), particulate matter less than 10 and 2.5 microns in diameter (PM₁₀ and PM_{2.5}, respectively) and lead (Pb); refer to Table 3.5-1, National and California Ambient Air Quality Standards. The EPA also has regulatory and enforcement jurisdiction over emission sources beyond State waters (outer continental shelf), and those that are under the exclusive authority of the Federal government, such as aircraft, locomotives, and interstate trucking.

California Air Resources Board

The California Air Resources Board (CARB), a department of the California Environmental Protection Agency (CalEPA), oversees air quality planning and control throughout California. Its responsibility lies with ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the FCAA requirements and regulating emissions from motor vehicles sold in California. It also sets fuel specifications to further reduce vehicular emissions.

The amendments to the CCAA establish California Ambient Air Quality Standards (CAAQS), and a legal mandate to achieve these standards by the earliest practicable date. These standards apply to the same criteria pollutants as the FCAA, and also include sulfate, visibility, hydrogen sulfide, and vinyl chloride; refer to Table 3.5-1, National and California Ambient Air Quality Standards.

Bay Area Air Quality Management District (BAAQMD)

CARB has established a state, health-based, air quality standard for ozone. Under the CCAA, areas not in compliance with this standard must prepare an ozone reduction plan. All major metropolitan areas within the State of California, including the Bay Area, must comply with this standard and, therefore, must submit an attainment plan every three years. Pursuant to the CCAA and subsequent amendments, the BAAQMD prepared the Bay Area 2000 Clean Air Plan (CAP) for adoption by the Board on December 20, 2000. The main objective of the CAP is to reduce emissions of certain air pollutants that lead to the formation of ozone, or “smog,” in the lower atmosphere. The CAP represents a comprehensive strategy to reduce ozone emissions from area and mobile sources. The CAP includes specific measures that encourage cities and counties to develop and implement local plans, policies and programs to reduce auto use and improve air quality.

Toxic Air Contaminants (TACs)

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., 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 difficult scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state’s Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The EPA has adopted low sulfur diesel fuel standards that will reduce diesel particulate matter substantially. These standards go into effect in June 2006. Exposure to diesel particulate matter is an issue of concern for sensitive receptors located adjacent to diesel fueled engines such as generators, truck stops, truck distribution centers, rail yards and freeways with high volumes of truck traffic.

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 PM₁₀ and PM_{2.5}. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

LOCAL AMBIENT AIR QUALITY

The BAAQMD operates several air quality monitoring stations within the Basin. There are two air quality monitoring stations within proximity of the Project site. One station is within San Rafael at 534 4th Street, approximately 3.25 miles south of the site. The next closest station is located at the San Francisco Monitoring Station at 10 Arkansas Street, which also represents climatic conditions similar to those experienced at the Project site. The following air quality information briefly describes the various types of pollutants monitored at the stations. Air quality data from 2002 through 2006 is provided in **Table 6-2**, Local Air Quality Levels.

**TABLE 6-2:
LOCAL AIR QUALITY LEVELS**

Pollutant	California	Federal	Year	Maximum Concentration ¹	Days (Samples) State/Federal Standard Exceeded
	Primary Standard				
Ozone (1 hour)	9 pphm for 1 hour	12 pphm for 1 hour	2002 ³	8 pphm	0/0
			2003 ³	9	0/0
			2004 ³	9	0/0
			2005 ³	8.4	0/0
			2006 ³	8.9	0/0
Ozone (8 hour)	NA	8 pphm	2002 ³	6 pphm	0/0
			2003 ³	7	0/0
			2004 ³	6	0/0
			2005 ³	5.9	0/0
			2006 ³	5.8	0/0
Carbon Monoxide	9.0 ppm for 8 hour	9.0 ppm for 8 hour	2002 ³	1.9 ppm	0/0
			2003 ³	2	0/0
			2004 ³	2	0/0
			2005 ³	1.7	0/0
			2006 ³	1.5	0/0
Nitrogen Dioxide	25 pphm for 1 hour	5.3 pphm annual average	2002 ³	6/1.7 pphm	0/0
			2003 ³	7/1.6	0/0
			2004 ³	6/1.5	0/0
			2005 ³	5.4//1.3	0/0
			2006 ³	5.4/1.4	0/0
Sulfur Dioxide	40 ppb for 24 hours	140 ppb for 24 hours	2002 ²	6 ppb	0/0
			2003 ²	7	0/0
			2004 ²	8	0/0
			2005 ²	7	0/0
			2006 ²	6	0/0
Particulate Matter (PM ₁₀) ^{4,5}	50 µg/m ³ for 24 hours	150 µg/m ³ for 24 hours	2002 ³	70 µg/m ³	2/0
			2003 ³	41	0/0
			2004 ³	52	1/0
			2005 ³	39	0/0
			2006 ³	68	1/0
Fine Particulate Matter (PM _{2.5}) ⁴	NA	65 µg/m ³ for 24 hours	2002 ²	70 µg/m ³	0/0
			2003 ²	42	0/0
			2004 ²	46	0/0
			2005 ²	43.6	0/0
			2006 ²	54.3	0/0

Notes:

1. Maximum concentration is measured over the same period as California standard
2. Data is based on measurements taken at the San Francisco-Arkansas monitoring station located at 10 Arkansas Street, San Francisco, CA
3. Data is based on measurements taken at the San Rafael monitoring station located at 534 4th Street, San Rafael,
4. PM₁₀ exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002
5. PM₁₀ and PM_{2.5} exceedances are derived from the number of samples exceeded, not days

Source: BAAQMD – http://www.baaqmd.gov/pio/aq_summaries/index.htm

Ozone (O₃)

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is a photochemical pollutant at ground level, and needs volatile organic compounds (VOCs), NO_x, and sunlight to form; therefore, VOCs and NO_x are ozone precursors. VOCs and NO_x are emitted from various sources throughout the City. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone (in the troposphere) can adversely affect the human respiratory system and other tissues. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems (such as forests and foothill plant communities), agricultural crops, and some man-made materials (such as rubber, paint and plastics). Societal costs from ozone damage include increased healthcare costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

The entire Basin is designated as a non-attainment area for State and Federal Ozone standards. As indicated in **Table 6-2**, Local Air Quality Levels, the 1-hour State standard for Ozone was not exceeded at the San Rafael Monitoring Station from 2002 through 2006.

Carbon Monoxide (CO)

CO is an odorless, colorless, toxic gas, produced almost entirely from combustion sources (automobiles). This pollutant interferes with the transfer of oxygen to the brain and is generally associated with areas of high traffic density. The Basin is designated as an attainment area for State CO standards and Federal CO standards. The Federal and State CO standards were not exceeded at the San Rafael Monitoring Station between 2002 and 2006, the most recent year that data is available.

Nitrogen Oxides (NO₂ and NO_x)

Nitrogen oxides (NO_x) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain.

NO₂, (often used interchangeably with NO_x) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO₂ occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_x can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_x concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO₂ may aggravate eyes and mucus membranes and cause pulmonary dysfunction. State and Federal standards were not exceeded between 2002 and 2006 at the San Rafael Monitoring Station.

Fine Particulate Matter (PM₁₀ and PM_{2.5})

Particulate matter pollution consists of very small liquid and solid particles floating in the air, and is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. Some particles are large or dark enough to be seen as soot or smoke; others are so small that they can be detected only with an electron microscope. PM₁₀ particles are less than or equal to 10 microns in aerodynamic diameter; PM_{2.5} particles are less than or equal to 2.5 microns in aerodynamic diameter, and are a subset (portion) of PM₁₀.

In the western United States, there are sources of PM₁₀ in both urban and rural areas. PM₁₀ and PM_{2.5} are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles, power plants, industrial processing, wood-burning stoves and fireplaces, wildfires, dust from roads, construction, landfills, agriculture, and fugitive windblown dust.

PM₁₀ and PM_{2.5} particles are small enough to be inhaled into, and lodge in, the deepest parts of the lung. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings.

The State standard for PM₁₀ is 50 micrograms per cubic meter (µg/m³) averaged over 24 hours; this standard was exceeded 4 days at the San Rafael Monitoring Station between 2002 and 2006. The Federal standard for PM₁₀ is 150 µg/m³ averaged over 24 hours and was not exceeded at the San Rafael Monitoring Station in the past five years.

Sulfur Dioxide (SO₂ and SO_x) and Lead (Pb)

Sulfur dioxide (SO₂) is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Sulfur dioxide is often used interchangeably with sulfur oxides (SO_x) and lead (Pb).

Sulfur dioxide levels in all areas of the Basin do not exceed Federal or State standards, and the Basin is designated as in attainment for both State and Federal SO_x standards. SO₂ did not exceed Federal or State standards at the San Rafael Monitoring Station between 2002 and 2006.

Toxic Air Contaminants (TACs)

According to Section 39655 of the California H&SC, a toxic air contaminant (TAC) is “an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.” In addition, 189 substances that have been listed as Federal hazardous air pollutants (HAPs), pursuant to Section 7412 of Title 42 of the United States Code, are TACs under the State’s air toxics program, pursuant to Section 39657 (b) of the H&SC.

TACs can cause various cancers, depending on the particular chemicals, their type, and the duration of exposure. Additionally, some TACs may cause other health effects over the short or long term. The ten TACs posing the greatest health risk in California are acetaldehyde, benzene, 1-3 butadiene, carbon tetrachloride, hexavalent chromium, paradichlorobenzene, formaldehyde, methylene chloride, perchlorethylene, and diesel particulate matter.

Hydrocarbons: Reactive Organic Gases (ROGs) and Volatile Organic Compound (VOCs)

Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases, including reactive organic gases (ROGs) and volatile organic compounds (VOCs). ROGs comprise all hydrocarbons except those exempted by the CARB; therefore, ROGs are a set of organic gases based on State rules and regulations. VOCs are similar to ROGs in that they are all organic gases, but Federal law exempts some ROGs. VOCs are therefore a set of organic gases based on Federal rules and regulations. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

The health effects of hydrocarbons result from the formation of ozone and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of

hydrocarbons are considered TACs (“air toxics”). There are no separate health standards for VOCs, although some VOCs are also toxic; an example is benzene, which is both a VOC and a carcinogen.

Sensitive Receptors

Land uses considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive populations (i.e., children, senior citizens and acutely or chronically ill people) are more susceptible to the effects of air pollution, especially localized sources of toxics and CO, than are the general population.

Nearby land uses that host sensitive receptors include a skilled nursing facility located approximately ¼ mile to the northwest of the Project site on McInnis Parkway, a regional park located between 1/8 and ¼ mile to the north of the site on Smith Ranch Road, and the Contempo Marin residential community located adjacent to the site toward the west.

IMPACTS ANALYSIS

SIGNIFICANCE CRITERIA

Both the state and federal governments have established health based Ambient Air Quality Standards (AAQS) for six air pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect public health and welfare with a reasonable margin of safety.

In addition to primary and secondary AAQS, the State of California has established a set of episode criteria for ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM). These criteria address short term exposure to air pollutants that threaten public health.

CEQA Standards of Significance

The following thresholds for measuring a Project’s environmental impacts are based upon CEQA Guidelines and BAAQMD thresholds.

- Any conflict with or obstruction of the implementation of the applicable air quality plan.
- Any violation of any air quality standard or contribution to an existing or projected air quality violation.

- Any cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Exposure of sensitive receptors to substantial pollutant concentration or substantial levels of toxic air contaminants.
- Creation of objectionable odors affecting a substantial number of people.

BAAQMD CEQA Guidelines

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the determinations of significance. *BAAQMD CEQA Guidelines* provide the following definitions of a significant air quality impact:¹

- A project contributing to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours or 20 ppm for 1 hour would be considered to have a significant impact.
- A project that generates criteria air pollutant emissions in excess of the BAAQMD annual or daily thresholds would be considered to have a significant air quality impact. The current thresholds are 15 tons/year or 80 pounds/day for Reactive Organic Gases (ROG), Nitrogen Oxides (NO_x) or PM₁₀. Any proposed Project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact.
- Any project with the potential to frequently expose members of the public to objectionable odors could be deemed to have a significant impact.
- Any project with the potential to expose sensitive receptors or the general public to substantial levels of toxic air contaminants could be deemed to have a significant impact. The term “substantial levels” is further defined as an exposure associated with an excess cancer risk of 10 in one million.

The BAAQMD’s approach to analyses of construction impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions. The BAAQMD has identified a set of feasible PM₁₀ control measures for construction activities. These control measures are listed in **Table 6-3**. As noted in **Table 6-3**, “Basic Measures” should be implemented at all construction sites, regardless of

¹ Bay Area Air Quality Management District, *BAAQMD CEQA Guidelines*, 1999.

size. Additional “Enhanced Measures” should be implemented at larger construction sites greater than 4 acres where PM₁₀ emissions generally will be higher. **Table 6-3** also lists other PM₁₀ controls (“Optional Measures”) that may be implemented if further emission reductions are deemed necessary by the Lead Agency.

**TABLE 6-3:
FEASIBLE CONTROL MEASURES FOR CONSTRUCTION OF PM₁₀**

Basic Control Measures – The following controls should be implemented at all sites.

Water all active construction areas at least once daily.

Cover all trucks hauling soil, sand, and any other loose materials *or* require all trucks to maintain at least two feet of freeboard.

Pave, apply water at least three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.

Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

Sweep streets daily (with water sweepers) if visible soil material is carried onto public streets.

Enhanced Control Measures – The following measures should be implemented at construction sites greater than four acres in area.

All “Basic” control measures listed above.

Hydroseed or apply (non-toxic) soil stabilizers to inactive areas (previously graded areas inactive for ten days or more).

Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).

Limit traffic speeds on unpaved roads to 15 mph.

Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

Replant vegetation in disturbed areas as quickly as possible.

Optional Control Measures – The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors or which for any other reason may warrant additional emissions reductions.

Install wheel washers for all exiting trucks, or wash off the tires or racks of all trucks and equipment leaving the site.

Install windbreaks, or plant trees/vegetative windbreaks at windward side(s) of construction sites.

Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

Limit the area subject to excavation, grading and other construction activity at any one time.

Source: Bay Area Air Quality Management District, *BAAQMD CEQA Guidelines*, Table 2 – Feasible Control Measures for Construction Emissions of PM₁₀, page 15

San Rafael General Plan 2020

In addition to CEQA significance criteria, The City of San Rafael *General Plan 2020*, Chapter 16: Air and Water Quality provides the following air quality policies that would apply to the proposed Project:

AW-2. Land Use Compatibility.

To ensure excellent air quality, promote land use compatibility for new development by using buffering techniques such as landscaping, setbacks, and screening in areas where different land uses abut one another.

AW-2a. Sensitive Receptors. Through development review, ensure that siting of any new sensitive receptors provides for adequate buffers from existing sources of toxic air contaminants or odors. If development of a sensitive receptor (a facility or land use that includes members of the population sensitive to the effects of air pollutants, such as children, the elderly and people with illnesses) is proposed within 500 feet of Highway 101 or I-580, an analysis of mobile source toxic air contaminant health risks should be performed. Development review should include an evaluation of the adequacy of the setback from the highway and, if necessary, identify design mitigation measures to reduce health risks to acceptable levels.

Responsibility: Community Development

Timeframe: Ongoing

Resources: Fees

AW-2b. Buffers. Through development review, ensure that any proposed new sources of toxic air contaminants or odors provide adequate buffers to protect sensitive receptors and comply with existing health standards.

Responsibility: Community Development

Timeframe: Ongoing

Resources: Fees

AW-3. Air Quality Planning with Other Processes.

Integrate air quality considerations with the land use and transportation processes by mitigating air quality impacts through land use design measures, such as encouraging Project design that will foster walking and biking.

AW-3a. Air Pollution Reduction Measures. Consider revisions to zoning regulations to require developers to implement strategies for air quality improvement described in the BAAQMD/ABAG's guide "Design Strategies for Encouraging Alternatives to Auto Use Through Local Development Review" or subsequent standards.

Responsibility: Community Development

Timeframe: Short Term

Resources: Fees

AW-3b. Smart Growth and Livable Communities Programs. Participate in and implement strategies of Metropolitan Transportation Commission's regional "Smart Growth Initiative" and "Transportation for Livable Communities Program."

Responsibility: Community Development, Public Works

Timeframe: Ongoing
Resources: Staff Time, Grants

AW-4. Particulate Matter Pollution Reduction.

Promote the reduction of particulate matter pollution from roads, parking lots, construction sites, agricultural lands and other activities.

AW-4a. Pollution Reduction. Through development review, ensure that any proposed new sources of particulate matter use latest control technology (such as enclosures, paving unpaved areas, parking lot sweeping and landscaping) and provide adequate buffer setbacks to protect existing or future sensitive receptors.

Responsibility: Community Development
Timeframe: Ongoing
Resources: Fees

URBEMIS

The URBEMIS 2007 9.2.4 air quality modeling software was used as a tool to create the analytical basis for the impact analysis. Emissions were estimated using the approach included in the URBEMIS model combined with emission factors developed by the CARB and BAAQMD.

URBEMIS 2007 operational emissions are comprised of two separate sources, area sources (i.e., emissions from space heating, landscape maintenance) and mobile sources. These emissions are calculated for the build-out period and take into account future mixes and emission controls. The URBEMIS 2007 factors were modified using the vehicle trip generation data from the September 2007 Fehr & Peers traffic study (see **Appendix D** or **Table 13-3**).

PROJECT IMPACTS AND MITIGATION MEASURES

Conflict with or Obstruct Implementation of Air Quality Plan

The Bay Area Air Quality Management District (BAAQMD) is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin. The BAAQMD has prepared and/or implements specific plans to meet the applicable laws, regulations, and programs, including Bay Area Clean Air Plan (2000) and the Ozone Attainment Plan (2001). The BAAQMD has also developed California Environmental Quality Act (CEQA) Guidelines to assist lead agencies in evaluating the significance of air quality impacts.

In formulating its compliance strategies, the BAAQMD relies on planned land uses established by local general plans. Projects proposed in jurisdictions with general plans that

are consistent with the BAAQMD's Clean Air Plan, and projects that conform to those general plans, would not have significant cumulative air quality impacts.

The Project site is a portion of the airport site and the entire property is designated for Airport/Recreation land uses in the City of San Rafael General Plan 2020. The existing airport site is developed with a private airport with 100 hangers and 22,500 square feet of light industrial buildings. The proposed Project would add an 85,700-square-foot indoor recreational facility and two outdoor sports fields consistent with the site's current Airport/Recreation land use designation. However, the site's current land use designation is not the designation that was assigned to it when the air quality projections of the Bay Area Clean Air Plan were formulated. When the Clean Air Plan was prepared, the land use designation on the Project site was Conservation, which did not have any development assumptions. Therefore, while the Project site does conform to the City of San Rafael *General Plan 2020*, it does not match the original assumptions used to create the CAP. To address this, the Project was analyzed. However, operational emissions were estimated using URBEMIS 2007 9.2.4. The results are provided below under the discussion of air quality standard violations.

The BAAQMD CEQA Guidelines provides a table (Table 6) that identifies the size or activity levels of various land uses which, based on default assumptions, would result in mobile source emissions exceeding the District's threshold of significance for total emissions.² Exceeding the District's threshold of significance for total emissions would be considered a conflict with the Bay Area Clean Air Plan (2000), resulting in a potentially significant impact.

Table 6 of the BAAQMD CEQA Guidelines does not identify a specific land use that matches the Project's proposed recreational land use. In such cases, the BAAQMD CEQA Guidelines state that projects generating more than 2,000 vehicle trips per day could conflict with the Bay Area Clean Air Plan (2000) by generating mobile source emissions exceeding the District's threshold of significance for total emissions, resulting in a potentially significant impact. Projects generating more than 2,000 vehicle trips per day must undergo detailed air quality analysis.

According to the Project traffic study, the proposed recreational facility would generate 1,701 daily trips³. The proposed Project's trip generation is below the District's threshold of significance for total emissions and not considered to be in conflict with the Bay Area Clean Air Plan (2000). Therefore, the proposed Project would not conflict with the applicable Clean Air Plan and would result in a *less than significant* impact.

² BAAQMD CEQA Guidelines, Table 6.

³ Fehr & Peers, *San Rafael Airport Recreational Facility Traffic Impact Analysis*, September 7, 2007, p. 17.

Violation of Air Quality Standards

The Bay Area is considered a non-attainment zone for ozone under both the Federal Clean Air Act and the California Clean Air Act. The Bay Area is also considered non-attainment for small particulate matter less than ten microns (also known as PM₁₀) under the California Clean Air Act, but not the Federal Clean Air Act. The Bay Area was previously considered a non-attainment area for carbon monoxide, but has attained both the State and Federal standards. As a result, the Bay Area is considered a carbon monoxide maintenance area under the Federal Clean Air Act.

The Bay Area is considered to have attained standards for all other regulated air pollutants (e.g., nitrogen oxide, sulfur dioxide, and lead). Attainment signifies that the region normally does not violate air quality standards. Although ozone and PM₁₀ concentrations are almost always below air quality limits in San Rafael, emissions from the area could be contributing to air quality violations in other parts of the Bay Area. To attain and maintain ambient air quality standards, the BAAQMD has established thresholds of significance for air pollutants. These thresholds are for air pollutants, ozone precursors (reactive organic gases and nitrogen oxides), and PM₁₀, for which the BAAQMD has not attained ambient air quality standards. Projects with substantial CO emissions, or which generate substantial traffic that affects congested intersections, must undergo detailed CO analysis to predict local concentrations of that air pollutant. These concentrations are compared with applicable State and Federal ambient air quality standards.

The results of the URBEMIS 2007 modeling of operational emissions are provided in the following tables:

**TABLE 6-4:
COMBINED SUMMER EMISSIONS**

	Criteria Pollutants (lbs/day)						
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Area Source Emissions	0.91	0.63	5.12	0.00	0.02	0.02	694.03
Operational (Vehicle) Emission Estimates	11.33	14.15	141.42	0.13	21.62	4.12	12,134.59
Area Source and Operational Total	12.24	14.78	146.54	0.13	21.64	4.14	12,828.62

Source: URBEMIS 2007 9.2.4

**TABLE 6-5:
COMBINED WINTER EMISSIONS**

	Criteria Pollutants (lbs/day)						
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Area Source Emissions	0.54	0.57	0.48	0.0	0.00	0.00	685.60
Operational (Vehicle) Emission Estimates	13.38	21.09	155.12	0.10	21.62	4.12	10,499.05
Area Source and Operational Total	13.92	21.66	155.60	0.10	21.62	4.12	11,184.65

Source: URBEMIS 2007 9.2.4

**TABLE 6-6:
COMBINED ANNUAL EMISSIONS**

	Criteria Pollutants (tons/day)						
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Area Source Emissions	0.13	0.1	0.51	0.0	0.0	0.0	125.88
Operational (Vehicle) Emission Estimates	2.20	3.01	26.64	0.02	3.94	0.75	2,115.07
Area Source and Operational Total	2.33	3.12	27.15	0.02	3.94	0.75	2,240.95

Source: URBEMIS 2007 9.2.4

Operational/Long-term

In regard to long-term impacts to air quality, the proposed recreational facility does not include a land use that would generate long-term air pollutants or the types of activities or uses that would generate any “point source” emissions. Point source emissions include equipment or devices that would create emissions or significant amounts of “area source” emissions, which are sources of air pollutants that individually emit relatively small

quantities of air pollutants, but which cumulatively may emit large quantities of emissions. The principal source of air pollutant emissions for this type of project would be from motor vehicle trips generated by the Project, otherwise known as “indirect sources.” The proposed recreational facility is not a common land use to which an Institute of Traffic Engineers trip rate can be assigned; therefore a traffic study was prepared for this Project using other similar facilities as a model. The City Traffic Engineer has reviewed the traffic report prepared for the proposed Project and accepted the traffic generation estimates. The traffic report identifies that the proposed Project would generate 1,701 total vehicular trips a day. The BAAQMD CEQA Guidelines includes Table 6, which dictates the size or activity levels for various land uses that would result in mobile source emissions exceeding the District’s threshold of significance. Generally, projects that generate fewer than 2,000 vehicle trips per day are determined to not exceed the threshold of significance for total emissions. The 1,701 vehicle trips per day estimated for the proposed recreational facility is less than the number of trips per day identified by the threshold of significance.

Another way to determine whether an impact would occur is by looking at generated traffic. Traffic generated from the development of this proposed Project would neither cause the nearby intersections or roadways to decline to Level of Service D, E or F, nor increase traffic volumes on nearby roadways by more than 10% (see Chapter 13, Transportation and Traffic).

Lastly, the URBEMIS 2007 modeling prepared for the proposed Project demonstrates that it would not generate criteria air pollutant emissions in excess of the BAAQMD daily thresholds. **Tables 6-4** and **6-5** above show that the estimated combined daily operational emissions for ROG, NO_x and PM₁₀ would be significantly lower than 80 pounds per day in both the Summer and Winter.

To summarize, the Project would generate fewer than 2,000 vehicle trips per day, would not generate substantial traffic at intersections, and would not exceed BAAQMD daily thresholds. Therefore the proposed Project would not generate substantial amounts carbon monoxide emissions nor violate air quality standards. Therefore, a *less than significant* impact would occur.

Construction/Short-term

Impact AQ-1 Construction Impacts. Construction of the proposed Project would involve substantial grading activities that could affect air quality, particularly regarding emissions of PM₁₀. This impact is considered *potentially significant*.

In terms of short-term impacts, grading of the proposed Project would involve 35,000 cubic yards of fill and 3,000 cubic yards of cut. Although the grading activities would be temporary in duration, they can be substantial and can represent a significant impact on air quality, particularly in regards to emissions of PM₁₀. This is a *potentially significant* impact. The

BAAQMD's approach to CEQA analysis of construction impacts is to emphasize the implementation of effective and comprehensive control measures rather than detailed quantification of emissions. All construction activities would be required to adhere to these control measures

Mitigation Measures:

- MM AQ-1 Construction Impacts.** The Project Contractor shall implement the following control measures during construction activities to reduce PM₁₀ emissions per the BAAQMD's recommendation.
- All active construction areas shall be watered at least twice daily. A water truck or equivalent method shall be in place prior to commencing grading operations.
 - All trucks hauling soil, sand, and other loose materials shall be covered and maintain at least one foot of freeboard.
 - All unpaved access roads, parking areas and staging areas at construction sites shall be paved, watered three times daily, or applied with non-toxic soil stabilizers.
 - All paved access roads, parking areas and staging areas at the construction site shall be swept daily with water sweepers and adjacent public streets shall be swept if visible soil material is carried onto them. This shall also include Smith Ranch Road (from the entrance to the site west ¼ mile daily (with water sweepers) if visible soil material is carried onto adjacent public streets. All inactive construction areas (previously graded areas inactive for ten days or more) shall be treated with hydroseed or non-toxic soil stabilizers.
 - Any exposed stockpiles (dirt, sand, etc.) shall be enclosed, covered and watered twice daily or non-toxic soil binders shall be applied to any exposed stockpiles
 - All construction traffic on unpaved roads shall be limited to speeds of 15 mph. Prior to the commencement of any grading, appropriate signs shall be placed on site to identify the maximum speed.
 - Excavation and grading activity shall be suspended when wind gusts exceed 25 miles per hour.
 - Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.

- The Project sponsor shall inform the contractor, general contractor or site supervisor of these requirements and shall be responsible for informing subcontractors of these requirements and for implementing these measures on the site.
- A dust control coordinator shall be designated for the Project. The name, address and telephone number of the dust coordinator shall be prominently posted on site, and shall be kept on file at the Planning Division. The coordinator shall respond to dust complaints promptly (within 24 hours) and shall have the authority to take corrective action.
- The above requirements shall be noted on the grading plans or building permit plans prepared for the Project prior to issuance of any permit.

MM AQ-1b **Plan Notations.** Prior to approval of the final improvement plans and specifications, the City of San Rafael shall confirm that the plans and specifications stipulate that, ozone precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications, to the satisfaction of the City. The City inspector shall be responsible for ensuring that contractors comply with this measure during construction.

MM AQ-1c **Construction Contract Specifications.** Prior to issuance of grading permits or approval of grading plans, the Applicant shall include in the construction contract standard specifications a written list of instructions to be carried out by the construction manager specifying measures to minimize emissions by heavy equipment. Measures shall include provisions for proper maintenance of equipment engines, measures to avoid equipment idling more than two minutes and avoidance of unnecessary delay of traffic on off-site access roads by heavy equipment blocking traffic.

Resulting level of significance

The implementation of **MMs AQ-1a through AQ-1c**, above, will reduce Project construction related impacts to a level considered *less than significant*.

Cumulative Net Increase of Criteria Pollutant

The Project would not have significant cumulative impacts. The Project site is a portion of the airport site and the entire property is designated for Airport/Recreation land uses in the San Rafael *General Plan 2020*. In formulating its compliance strategies, the BAAQMD relies on planned land uses established by local general plans. Projects that are consistent with their

general plans and are located in a jurisdiction where their general plans are consistent with the BAAQMD's Clean Air Plan (CAP) are not considered to have significant cumulative impacts.

However, the Airport Recreation land use designation assigned to the Project site by the San Rafael *General Plan 2020* is not fully consistent with the BAAQMD's 2000 CAP. The BAAQMD 2000 CAP is consistent with the City's *General Plan 2000*, which assigned a land use designation of Conservation to the Project site. The Conservation land use does not have any development assumptions; therefore, the development assumed by the site's current land use designation of Airport Recreation was not fully incorporated into the 2000 CAP. The BAAQMD prepares periodic updates to the CAP to ensure the maintenance of healthy air within the air basin. In the update process, the Air District incorporates the development assumptions, projected population growth and travel patterns within the jurisdictions that comprise the Air Basin. The BAAQMD is currently preparing a 2009 update to the CAP, which will incorporate the land use assumptions of the City of San Rafael *General Plan 2020*.

In the meantime, one can look at the Project's estimated emissions of criteria pollutants. The BAAQMD's thresholds for criteria pollutants ROG, NO_x or PM₁₀ are 80 pound per day and 15 tons per year. Any proposed project with an individually significant air quality impact would also have a significant cumulative impact. The URBEMIS results shown in **Tables 6-4 through 6-6** demonstrate that the Project's individual emissions of all pollutants would be significantly lower than 80 pounds per day or 15 pounds per year. Based upon this information, it is determined that the Project would not have a significant cumulative impact in terms of criteria emissions.

The Proposed project development assumptions are not consistent with the 2000 CAP. However, the CAP is currently being revised for 2009 and, for the reasons described above, it is expected that the San Rafael *General Plan 2020* will be consistent with the 2009 update. The proposed Project would not result in any individual operational impacts with respect to criteria pollutants, thus the Project would not result in any cumulative impacts with respect to criteria pollutants; and this analysis provides **MMs AQ-1a through AQ-1c**, which provide the BAAQMD's comprehensive control measures for construction impacts which, if implemented, would reduce any construction related air quality impacts, particularly those related to particulate matter (PM₁₀), to a less than significant level. For these reasons, the Project's cumulative air quality impacts are considered to be *less than significant*.

Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

The BAAQMD CEQA Guidelines define sensitive receptors as facilities that house or attract children, the elderly, people with illness or others who are especially sensitive to air pollutants. Such uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics.

Nearby land uses which host sensitive receptors include a skilled nursing facility that is located approximately ¼ mile to the northwest of this site on McInnis Parkway and a regional park that is located approximately 1/8 to ¼ mile to the north of this site on Smith Ranch Road, and the Contempo Marin residential community located adjacent to the site toward the west. There are also four residences on the airport site. The proposed recreational facility would not generate substantial pollutant concentrations as discussed above.

The Project would not involve the demolition of a building or structure, therefore there is no potential for substantial dust emissions of asbestos, lead-based paint and other potentially hazardous building materials to be released or created while a structure is demolished or as debris is loaded into trucks for disposal. Furthermore, the proposed recreational facility would use building materials that are up to current codes and do not contain hazardous materials.

In terms of construction impacts, **MMs AQ1a–AQ-1c**, above, require the incorporation of the BAAQMD’s comprehensive control measures for construction address localize air quality impacts, which will ensure that particulate matter generated by construction and grading activities and particulate matter created by diesel combustion engines does not significantly impact sensitive receptors in the area. For these reasons the Project will have a *less than significant* impact on sensitive receptors.

Creation of Objectionable Odors

The BAAQMD CEQA Guidelines list examples of land uses which represent potential sources of objectionable odors, including asphalt batch plants, chemical manufacturing and fiberglass manufacturing facilities, coffee roasters, composting facilities, painting and coating operations (auto body shops), petroleum refineries, rendering plants, sanitary landfills, transfer stations, and wastewater treatment plants. Screening distances within which these land uses could expose the public to objectionable odors are one mile (two miles for petroleum refineries).

The proposed recreational facility does not include any activities or uses that are known to generate objectionable odors. Project construction could result in dust emissions and other temporary odors during grading and construction that could affect surrounding residential and users of the adjacent McInnis Park. With the mitigation measures identified in **MMs AQ1a–AQ-1c**, above, this impact would be *less than significant*.

BIOLOGICAL RESOURCES

INTRODUCTION

Monk & Associates, Inc. (M&A) prepared the biological resource analysis for the proposed Project. The purpose of M&A's analysis is to provide a description of existing biological resources on and immediately adjacent to the Project site and to identify potentially significant impacts that could occur to sensitive biological resources from the construction of a new recreational facility and two outdoor fields on a portion of the San Rafael Airport property. In preparing the biological resource analysis for the proposed Project, M&A reviewed the *San Rafael Airport Recreational Facility Initial Study/Mitigated Negative Declaration* dated January 27, 2006, the *Draft Biological Assessment* prepared by WRA (Wetland Research Associates) dated February 2005, and the *Jurisdictional Area Delineation* report prepared by WRA dated September 2005.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS), and other conservation/ resource organizations including the California Native Plant Society (CNPS). Biological resources also include waters of the United States and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and CDFG.

The M&A biological resources analysis, and this EIR chapter, also provide mitigation measures for “potentially significant” and “significant” impacts that could occur to biological resources. When implemented, the mitigation measures will reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA). The full M&A biological resources analysis can be found in **Appendix E** of this EIR.

SETTING

The San Rafael Airport Recreational Facility is proposed to be constructed on a 9.1-acre portion of the 119.52-acre San Rafael Airport located in the City of San Rafael, Marin County, California (see **Figure 3-1**). The North Fork of Gallinas Creek, a tidally influenced tributary of the San Pablo Bay, flows northeast approximately parallel with the northern

Project site boundary. The existing airport runway borders the Project site to the south. South of the runway, the South Fork of Gallinas Creek, also a tidally influenced tributary of the San Pablo Bay, flows north, northeast approximately parallel with the southern airport property boundary. The proposed Recreational Facility will be located north of the runway, thus the runway is between the proposed facility and the South Fork of Gallinas Creek. As such, the South Fork of Gallinas Creek will not be affected by the proposed Project.

Figure 3-2 in the Project Description provides an aerial photograph of the Project site showing the land use of the site and the surrounding area. There is a high level of disturbance associated with all sides of the two branches of Gallinas Creek in the vicinity of the Project site. Immediately to the north of the North Fork of Gallinas Creek is the County of Marin John F. McInnis Park and Golf Center that includes a restaurant and parking areas, a golf course and driving range, mini golf, batting cages, and two athletic fields. In addition, there is a pedestrian trail along the northern bank of the North Fork of Gallinas Creek, across the creek channel from the Project site area. The pedestrian trail is heavily used by pedestrians with dogs that also use the designated “off-leash” dog park associated with the John F. McInnis Park. Finally, the Mt. Tam Picnic Area is located immediately adjacent to the marsh vegetation along the northern bank of the North Fork of Gallinas Creek, and the McInnis Park Wetland Preserve includes a wildlife viewing dock that extends into the channel from the northern bank of the North Fork of Gallinas Creek.

The San Rafael Airport operations facilities are located immediately west of the Project site and include 100 airport hangers, a runway and taxiway, industrial buildings, residential housing, and associated landscaping and lighting. South of the Project site is the South Fork of Gallinas Creek and further to the south there is high density residential housing development. Extensive salt marshes and mudflats occur to the east of the Project site, along the edge of San Pablo Bay.

The ruderal grassland habitats adjacent to the North Fork of Gallinas Creek and immediately north of the runway within the Project site are subject to frequent mowing and disking. This annual maintenance is conducted pursuant to the Federal Aviation Administration (FAA) guidance established to prevent dangerous wildlife-aircraft collisions and “bird strikes.” According to the 2004 FAA Advisory Circular *Hazardous Wildlife Attractants on or Near Airports*, undeveloped land commonly found around airports—particularly poorly drained area, roosting habitats or wetlands—present potential hazards to aviation if they encourage wildlife use. The FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports, and recommends a separation distance of 5,000 feet from any “hazardous wildlife attractants.” This setback area from active aircraft operation areas is to be maintained to discourage wildlife populations, particularly birds, from living in or moving through an area. Consequently, the San Rafael Airport has implemented an on-going vegetation control effort to discourage any wildlife use of the ruderal grasslands within the proposed Project area. In addition, the airport maintenance staff installed an 8-foot tall “deer-proof” fence

around the Project area and the runway to prevent Columbian black-tailed deer (*Odocoileus hemionus columbianus*) from entering the area and running onto the runway.

PROPOSED PROJECT

Figure 3-3 provides a site plan for the proposed San Rafael Airport Recreational Facility. The proposed 71,300 square foot recreational facility will include offices and meeting rooms for team meetings, an indoor gymnastics and dance school facility, two indoor soccer fields with a viewing deck and café located above and between the soccer fields. The facility will also feature an outdoor soccer field with lighting, a soccer warm-up area, and associated parking areas. The distance between the proposed recreational facility, including the building and the outdoor fields, and the top of the levee along the North Fork of Gallinas Creek will be a minimum of 100 feet, as shown on the Project site plan. As designed, this Project will not impact any wetlands identified in the ruderal field that is located north of the Project site. The proposed Project will maintain a 50-foot buffer between the Project facilities and these wetlands, as shown on the Project site plan (**Figure 3-3**). The South Fork of Gallinas Creek will not be affected by the Project.

Silveira Parkway, the existing access road to the San Rafael Airport from Smith Ranch Road, crosses over the North Fork of Gallinas Creek via an existing bridge. As part of the proposed Project, a new deck will be placed over the existing bridge support structures. Specifically, the bridge improvements would include removing the existing bridge rail, lowering a pre-fabricated 122-foot long and 25-foot wide bridge on top of the existing bridge structure, pile-driving new piers into paved areas located above the top of the creek bank in order to support the new bridge, and pumping eight inches of cement into the bridge deck to form the new driving surface. A crane will be used to lower the pre-fabricated bridge into place. The proposed bridge improvements are expected to be completed in approximately two weeks and the pile driving work is expected to be conducted between the dates of September 1 and October 15. The proposed bridge replacement project will not result in any direct impacts to the creek banks or marsh habitats along the North Fork of Gallinas Creek. No riparian habitat or wetland habitat will be filled as a result of the bridge improvements.

There is an existing unimproved maintenance vehicle road (graveled road) that occurs along the southern edge of the airport runway that provides access to a pump house located at the base of the levee along the southern bank of the North Fork of Gallinas Creek. As shown on the site plan, this access is proposed to be re-routed in order to provide passage from the proposed overflow parking area to the pump station, passing between the outdoor soccer field and soccer warm-up area. The pump house is an integral part of the airport maintenance operation keeping stormwater from potentially flooding the runway. This maintenance road will continue to be maintained as part of the airport facility.

REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. A discussion each law's pertinence to the proposed Project is also provided.

FEDERAL ENDANGERED SPECIES ACT

The primary focus of the FESA of 1973 is that all federal agencies must seek to conserve threatened and endangered species through their actions. FESA has been amended several times in the past to correct perceived and real shortcomings. FESA contains three key sections. Section 4 (16 USCA §1533) outlines the procedure for listing endangered plants and wildlife. Section 7 (§1536) imposes limits on the actions of federal agencies that might impact listed species. Section 9 (§1538) prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies. In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The USFWS enforces all other cases. Below, Sections 7, 9, and 10 of FESA are discussed since they are the two sections most relevant to the proposed Project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A recent (December 2001) decision by the 9th Circuit Court of Appeals ruled that the USFWS must show that a threatened or endangered species is present on a Project site and that it would be taken by the Project activities.¹ According to this ruling, the USFWS can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is actually present.

The Project site is located in an area that is regulated by the USFWS' Sacramento Endangered Species Office. This office believes the above case was narrowly focused on

¹ *Arizona Cattle Growers' Association, Jeff Menges, vs. the U.S. Fish and Wildlife Service and Bureau of Land Management, and the Southwest Center for Biological Diversity.*

federal grazing leases and the affects of these leases on federal listed species. Due to this narrow focus, the Sacramento office believes that this case has little bearing in northern California. This office claims that probable use of habitat by a federal listed species would still be subject to the provisions of FESA.

Section 9 applies not only to federal agencies but also to any local or State agency, and to any individual. If “take” of a listed species is necessary to complete an otherwise lawful activity, this triggers the need for consultation under Section 7 of FESA (for Federal agencies and projects with a federal “nexus” (that is, an authorized, funded or carried out by a federal agency)), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal “nexus”).

Section 7(a)(2) of the Act requires that each Federal agency shall, in consultation with and with the assistance of the USFWS, insure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat. Critical habitat identifies specific areas, both occupied and unoccupied, that are essential to the conservation of a listed species and that may require special management considerations or protection. Section 4 of the Act requires USFWS to consider economic and other relevant impacts of specifying any particular area as critical habitat.

Federal actions include permitting, funding, and entitlements for both federal projects, as well as private projects facilitated by federal actions (for example, a private landowner applying to the Corps for a permit). As an example, if a federally listed endangered species is present in “waters of the United States” on a project site, prior to authorizing impacts to “waters of the United States,” the U.S. Army Corps of Engineers (who administers the Clean Water Act) would be required to initiate “formal consultation” with USFWS pursuant to Section 7 of FESA. As part of the formal consultation, the USFWS would then be required to prepare a Biological Opinion based on a review and analysis of the Project applicant’s avoidance and mitigation plan. The Biological Opinion will either state that the Project will or will not result in “take” or threaten the continued existence of the species (not just that population). If an endangered species could be harmed by a proposed Project, USFWS has to be in complete concurrence with the proposed avoidance and mitigation plan. If USFWS is not in complete concurrence with the mitigation plan, they will submit a Biological Opinion to the Corps containing a “jeopardy decision” and state that a Corps’ permit should not be issued for the pending project. The applicant would then have an opportunity to submit a revised mitigation plan that provides greater protection for the species.

In the 1982 amendments to FESA, Congress established a provision in Section 10 that allows for the “incidental take” of endangered and threatened species of wildlife by non-federal entities (for example, project applicants, state and local agencies). “Incidental take” is defined by FESA as take that is “incidental to, and not the purpose of, the carrying out of an

otherwise lawful activity.” Under Section 10 of FESA, the applicant for an “incidental take permit” is required to submit a “conservation plan” to USFWS or NMFS that specifies, among other things, the impacts that are likely to result from the taking, and the measures the permit applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as “habitat conservation plans” or “HCPs” for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

Responsible Agency

FESA gives regulatory authority over terrestrial species and non-anadromous fish to the USFWS. The NMFS has authority over marine mammals and anadromous fish.

Applicability to the Proposed Project

Coho salmon and steelhead are the only federally listed fish species with potential to occur adjacent to the Project site. These salmonids may migrate up the North Fork of Gallinas Creek. The bridge replacement project will span the North Fork of Gallinas Creek and pilings will be driven outside the top-of-bank as part of the proposed bridge reconstruction project. As such, the Project should implement avoidance measures to ensure no impacts occur to these anadromous fish species.

There are no federally listed plants or terrestrial animal species expected to occur on the Project site or that would be impacted by the Project. The California clapper rail is a federally listed species that occurs in the North Fork of Gallinas Creek north of the Project site. Similarly, the salt marsh harvest mouse is a federally listed species that may also occur in the North Fork of Gallinas Creek. The upland habitats adjacent to the creek would not be impacted by the proposed Project, and will be protected by a 100-foot or greater buffer that will exist between the top-of-bank of North Gallinas Creek and the proposed recreational facilities. A fence will be installed along the outside edge of the buffer (furthest from the creek channel) as part of the proposed Project.

Implementation of various mitigation measures detailed in the impacts and mitigation section of this analysis will ensure that there are no Project-related impacts to the California clapper rail and the salt marsh harvest mouse. As such, after implementation of required mitigation measures, which shall be implemented prior to commencement of construction activities, impacts to federally listed species would not be expected to occur from implementation of the proposed Project.

FEDERAL MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to “take” (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Executive Order 13186 for conservation of migratory birds (January 11, 2001) requires that any project with federal involvement address impacts of federal actions on migratory birds. The order is designed to assist federal agencies in their efforts to comply with the MBTA and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with the USFWS to develop a memorandum of understanding (MOU). Protocols developed under the MOU must promote the conservation of migratory bird populations through the following means:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

Applicability to Proposed Project

White-tailed kite, western burrowing owl, short-eared owl and northern harrier have a low potential to nest on or adjacent to the proposed Project site area. These raptors (birds of prey) would be protected by the Migratory Bird Treaty Act. Also, special-status birds, such as San Pablo song sparrow and saltmarsh common yellowthroat, common songbirds and wading birds that occur in the marsh habitats along the North Fork of Gallinas Creek would be protected pursuant to this Act. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds were nesting. As long as there is no direct mortality of species protected pursuant to this Act caused by development of the site, there should be no constraints to the Project with respect to the Migratory Bird Treaty Act. Upon completion of nesting, the Project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring species, as detailed in the Impacts Analysis below.

STATE ENDANGERED SPECIES ACT

Section 2081 of the State Endangered Species Act

In 1984, the state legislated the California Endangered Species Act (CESA) (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would jeopardize threatened or endangered species if reasonable and prudent alternatives are available.

CESA requires that all state lead agencies (as defined under CEQA) conduct an endangered species consultation with CDFG if their actions could affect a state listed species. The state lead agency and/or project applicants must provide information to CDFG on the Project and its likely impacts. CDFG must then prepare written findings on whether the proposed action would jeopardize a listed species, or would result in the direct take of a listed species. Because CESA does not have a provision for “harm” (see discussion of FESA, above), CDFG considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If CDFG determines that a proposed project could impact a State listed threatened or endangered species, CDFG will provide recommendations for “reasonable and prudent” project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the Project’s benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no “irreversible or irretrievable” commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired “incidental take” permits from CDFG and/or USFWS (if it is a Federal listed species) prior to allowing/permitting impacts to such species.

If proposed Projects would result in impacts to a State listed species, an “incidental take” permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a Federal incidental take permit for Federal listed species). CDFG will issue an incidental take permit only if:

- 1) The authorized take is incidental to an otherwise lawful activity;
- 2) the impacts of the authorized take are minimized and fully mitigated;
- 3) measures required to minimize and fully mitigate the impacts of the authorized take:
 - a) are roughly proportional in extent to the impact of the taking on the species;
 - b) maintain the Project applicant’s objectives to the greatest extent possible; and,

- c) capable of successful implementation; and,
- 4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a habitat conservation plan (HCP) as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFG staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the Project pursuant to Section 7 of the federal Endangered Species Act, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of “take.” These species are listed in several statutes that identify “fully protected” species and “specified birds.” *See* Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a “fully protected” species or a “specified bird” occurs, an applicant must design the Project to avoid all take.

In September 1997, Assembly Bill 21 (Fish and Game Code §2080.1) was passed. This bill allows an applicant who has obtained a “non-jeopardy” federal Biological Opinion pursuant to Section 7, or who has received a federal 10(a) permit (federal incidental take permit), to submit the federal opinion or permit to CDFG for a determination as to whether the federal document is “consistent” with CESA. If after 30 days CDFG determines that the federal incidental take permit is consistent with state law, and that all state listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the Project. However, if CDFG determines that the federal opinion or permit is not consistent with CESA, or that there are state listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a state permit under Section 2081(b). The process provided in Fish and Game Code §2080.1 (Assembly Bill 21) may be of use when the incidental take would occur to species that are listed under both the federal and state endangered species acts. Assembly Bill 21 is of no use if an affected species is state-listed, but not federally listed.

State and federal incidental take permits are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-

aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

Applicability to Proposed Project

There are no state listed plant species that would likely be impacted by the proposed Project (see **Appendix E**, M&A Biology Report, Table 3). Coho salmon, salt marsh harvest mouse, California clapper rail and California black rail are state listed species that are either known to occur or could occur in the habitats immediately north of the Project site within the North Fork of Gallinas Creek corridor. Implementation of various mitigation measures will eliminate potential Project-related indirect impacts to state listed species and thus these potential impacts will be mitigated to a level regarded as less than significant (see Impact Analysis section). Accordingly, the proposed Project will not result in significant adverse impacts to species protected pursuant to CESA. Consequently, consultation with CDFG pursuant to the CESA will likely not be required for this Project. [Note: the bridge reconstruction portion of the Project will require a Streambed Alteration Agreement from CDFG (see section below on Section 1602 of the Fish and Game Code.)]

APPLICABLE CEQA REGULATIONS

Section 15380 of CEQA defines “endangered” species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. “Rare” species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered “threatened” as that term is used in the FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will “substantially affect a rare or endangered species of animal or plant or the habitat of the species.” The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat to that species despite its legal status or lack thereof.

Applicability to Proposed Project

This document addresses impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA. This document is suitable for use by the CEQA lead agency (in this case the City of San Rafael) for preparation of any CEQA review document prepared for the proposed Project. This report has been prepared as a Biology Section that is suitable for incorporation into an Environmental Impact Report prepared for the proposed Project.

CALIFORNIA FISH AND GAME CODE § 3503, 3503.5, 3511, AND 3513

California Fish and Game Code §3503, 3503.5, 3511, and 3513 prohibit the “take, possession, or destruction of birds, their nests or eggs.” Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered “take.” Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, “fully protected” birds, such as the white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). “Fully protected” birds may not be taken or possessed (that is, kept in captivity) at any time.

Applicability to the Proposed Project

Raptors that could be impacted by the Project include white-tailed kite, western burrowing owl, short-eared owl and northern harrier. Preconstruction surveys would have to be conducted for these species to ensure that there is no direct take of these birds including their eggs, or young. Any active nests that were found during preconstruction surveys would have to be avoided by the Project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. More specifics on the size of buffers are provided in the Impact Analysis section.

PROTECTED AMPHIBIANS

Under Title 14 of the California Code of Regulations (CCR 14, Division 1, Subdivision 1, Chapter 5, §41. Protected Amphibians), protected amphibians, such as the California tiger salamander may only be taken under special permit from California Department of Fish and Game issued pursuant to Sections 650 and 670.7 of these regulations.

Applicability to the Proposed Project

No special-status amphibians would likely be found on or adjacent to the Project site. As such, no impacts are expected to occur to special-status amphibians from the implementation of the proposed Project.

CITY OF SAN RAFAEL GENERAL PLAN

The Conservation Element of the City of San Rafael General Plan contains policies regarding the conservation of natural resources and protected habitats. The following policies are listed under “GOAL 31: PROTECTED HABITAT” of the Conservation Element of the City of San Rafael General Plan:

- CON-1** **Protection of Environmental Resources.** Protect or enhance environmental resources, such as ridgelines, wetlands, diked baylands, creeks and drainageways, shorelines and habitat for threatened and endangered species.
- CON-2** **Wetlands Preservation.** Require appropriate public and private wetlands preservation, restoration and/or rehabilitation through compensatory mitigation in the development process for unavoidable impacts. Support and promote acquisition of fee title and/or easements from willing property owners.
- CON-4** **Wetland Setbacks.** Maintain a minimum 50-foot development-free setback from wetlands, including, but not limited to, paving or structures. Setbacks of greater than 50 feet may be required on lots of two or more acres as determined through development review.
- CON-5** **Diked Baylands.** Protect seasonal wetlands and associated upland habitat contained within undeveloped diked baylands, or restore to tidal action.
- CON-6** **Creek and Drainageway Setbacks.** Require development-free setbacks, except for specific access points as approved per policy CON-7 (Public Access to Creeks), from existing creeks and drainageways that will maintain the functions and resulting values of these habitats.
- CON-9** **Native and/or Sensitive Habitats.** Protect habitats that are sensitive, rare, declining, unique, or represent a valuable biological resource.
- CON-10** **Impacts to Sensitive Habitats.** Minimize impacts to sensitive natural habitats through careful planning. Require compliance with applicable laws and regulations.
- CON-11** **Wildlife Corridors.** Preserve and protect areas that function as wildlife corridors, particularly those areas that provide natural connections permitting wildlife movement between designated sensitive habitats.
- CON-13** **Threatened and Endangered Species.** Preserve and protect threatened and endangered species of plants and animals formally listed consistent with the state and federal endangered species acts including protection of their habitat.
- CON-14** **Special Status Species.** Preserve and protect special status plants and animals, including candidate species for listing under the state and federal endangered species acts, California species of special concern, California

Native Plant Society List 1B plants, and other species protected under provisions of California Fish and Game Code.

Applicability to the Proposed Project

The proposed Project complies with all of the relevant policies listed above. While the Project site area is within a diked bayland area, the ruderal grasslands of the proposed Project site that are located adjacent to the existing airport runway, and that are maintained through routine mowing and maintenance, no longer provide the beneficial functions and values that are generally associated with “diked baylands.” Thus, the Project will not result in significant impacts to diked baylands, per se. In addition, the Project will not result in impacts to wetlands, creeks, shorelines or habitat for threatened and endangered species; rather, these biological resources are preserved and protected by the Project (see the Impact Analysis section). The required 50-foot development-free setback from Corps/RWQCB regulated wetlands is incorporated into the Project plan, and the required 100-foot creek setback is also provided alongside the North Fork of Gallinas Creek. Finally, state and federally endangered species, and special-status species, including their habitats adjacent to the Project site, are preserved and protected by the Project (see the Impact Analysis section).

REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, the State Water Resources Control Board, and CDFG to determine those areas within a project area that would be subject to their regulation.

U.S. ARMY CORPS OF ENGINEERS JURISDICTION AND GENERAL PERMITTING

Section 404 of the Clean Water Act

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into “waters of the United States” (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill material into any water of the United States. In the Federal Register “waters of the United States” are defined as, “...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce...” (33 CFR Section 328.3).

Limits of Corps' jurisdiction.

- 1) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)
- 2) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:
 - a) Extends to the high tide line, or
 - b) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.
- 3) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:
 - a) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
 - b) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
 - c) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 404 jurisdiction in “other waters” such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is the “line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas” (33 CFR Section 328.3[e]). Wetlands are defined as “...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions” (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

It should be noted that the extent of the Corps jurisdiction pursuant to Section 404 of the Clean Water Act was recently modified. In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, the U.S. Supreme Court [148 L. Ed. 2d 576 (2001) (SWANCC)] ruled that the Corps exceeded its authority under the Clean Water Act when it regulated discharges of fill material into “isolated” waters used as habitat by migratory birds.

Accordingly, waters (including wetlands) that are not connected hydrologically to navigable waters are not subject to regulation by the Corps.

Another recent Supreme Court decision also significantly changes how the Corps defines waters of the United States. On June 19, 2006 the United States Supreme Court, in a “four-one-four” decision, addressed the extent of Clean Water Act jurisdiction over wetlands adjacent to tributaries of navigable waters. In two consolidated cases, *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers*, a five-Justice majority of the Court remanded the case to the Sixth circuit for further consideration. The Court was unable to produce a majority vote in favor of any one jurisdictional standard for the Sixth Circuit to apply (or for the regulated community to follow). Instead, Justice Scalia authored a plurality opinion that would significantly narrow the reach of federal wetlands jurisdiction, while Justice Kennedy, concurring in the judgment only, concluded that the appropriate test for jurisdiction over wetlands was the presence of a “significant nexus” between wetlands and “navigable waters” in the traditional sense.

To aid biologists and others with conducting Corps jurisdictional determinations, the Corps and the Environmental Protection Agency jointly prepared an Instructional Guidebook to aid Corps field staff in completing the new “Approved Jurisdictional Determination Form,” and is intended to be used as the Corps’ Regulatory National Standard Operating Procedures for conducting an approved jurisdictional determination.

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to acquire authorization from the Corps prior to discharging or otherwise impacting “waters of the United States”. In many cases, the Corps must visit a proposed Project area to confirm the extent of area falling under their jurisdiction (to conduct a “jurisdictional determination”) prior to authorizing any permit for that project. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to “waters of the United States.”

Pursuant to Section 404 of the Clean Water Act, the Corps normally provides two alternatives for permitting impacts to “waters of the United States.” The first alternative would be to use Nationwide Permit(s). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)). The application process for Individual Permits is extensive and includes a public review (i.e., public notice and receipt of public comments) and must contain an “alternatives analysis” that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). The alternatives analysis is also typically reviewed by the federal Environmental Protection Agency (EPA), and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to any proposed Project there would not result in impacts to waters of the U.S., if the proposed permitted action is not a water dependent

project (e.g. a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed impacts are unavoidable.

Nationwide Permit(s) (NWP) are a type of general permit administered by the Corps and issued on a nationwide basis that authorize minor activities that affect Corps regulated waters. Under the NWP program, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330). It is also important to note that pursuant to 33 CFR Section 330.4(e), there may be special regional conditions or modifications to NWPs that could have relevance to individual proposed Projects. Finally, pursuant to 33 CFR Section 330.6(a), Nationwide permittees may, and in some cases, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.*, must receive “verification” from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of “no net loss” of wetlands (waters of the United States). Therefore, it is incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.*, impacts would be mitigated). Typically, the Corps requires mitigation to be “in-kind” (*i.e.*, if a stream channel would be filled, mitigation would include replacing it with a new stream channel), and at a minimum of a 1:1 replacement ratio (*i.e.*, one acre or fraction thereof recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required. Usually the 2:1 ratio is met by recreation or enhancement of an equivalent amount of wetland that is impacted, in addition to preserving an equivalent amount of wetland. In some cases, the Corps allows “out-of-kind” mitigation if the compensation/mitigation has greater value than the impacted area. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet their mitigation requirements. Mitigation banks have limited distribution and the Corps typically only allows their use when projects have limited impacts. If a project meets conditions of Nationwide Permits, and an Individual Permit is not required by the Corps, then typically the Corps allows use of wetland mitigation banks (if available) to meet its no net loss requirement and to otherwise mitigate the impacts to waters of the United States resulting from the proposed Project.

Applicability to the Proposed Project

A wetland delineation of the Project site was conducted by WRA (Wetlands Research Associates) on September 7, 2005. The *Jurisdictional Area Delineation* report prepared by WRA was submitted to the Corps for verification. The Corps visited the site on October 26, 2006 and verified a jurisdictional map in a letter dated December 14, 2006. The Corps’ jurisdictional determination will expire in five years from the date of the letter. **Figure 7-1** provides a copy of the Corps’ verified delineation map that shows the extent of Corps

jurisdiction on the proposed Project site. A copy of the Corps letter is also provided in **Appendix E**.

The drainage ditches that occur around the outer perimeter of the proposed Project area were excavated in dry land to collect stormwater runoff from upland areas of the site, including the airport runway areas. These ditches were not claimed by the Corps as jurisdictional pursuant to Section 404 of the Clean Water Act. There are several wetland areas north of the proposed Project area, as shown on the Map of Jurisdictional Areas prepared by WRA (**Figure 7-1**). These areas were not within the area that was confirmed by Corps. Regardless, these wetlands will not be affected by the proposed Project and in fact are protected with 50-foot buffers from the proposed Project facilities. Therefore, based on the Corps letter dated December 14, 2006, the proposed Project will not result in impacts to the Corps' jurisdiction, and consequently, no permit will be required from the Corps for the activities proposed as part of the Project.

STATE WATER RESOURCES CONTROL BOARD (SWRCB) / CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in “waters of the State” (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the United States, including wetlands and other waters, any Corps permit authorized for a proposed Project would be invalid unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification or waiver of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the California Endangered Species Act, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality.

Additionally, if a proposed project would impact waters of the State, including wetlands, the Project applicant must demonstrate that the Project is unable to avoid these adverse impacts, or water quality certification will most likely be denied. Section 401 Certification may also be denied based on significant adverse impacts to waters of the United States/State, including wetlands. The RWQCB has also adopted the Corps' policy that there shall be “no net loss” of wetlands. Thus, prior to certifying water quality, the RWQCB will impose avoidance mitigation requirements on project proponents that impact waters of the State.

Applicability to the Proposed Project

Since the Corps did not exert jurisdiction over any portion of the proposed Project site, the Project site will not be subject to regulation pursuant to Section 401 of the Clean Water Act. Please note that activities on the proposed Project site would still likely be regulated by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act (see below).

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that “any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge” with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1)). The regulatory requirements of the Porter-Cologne Act and the RWQCB regarding water quality are discussed further in the regulatory setting section of Chapter 10 of this EIR, *Hydrology and Water Quality*. The term “waters of the State” is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates impacts to “isolated wetlands,” or those wetlands considered to be outside of the Corps’ jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute “pollution.” Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code § 13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any “threat” to water quality.

For a project of the size proposed, the RWQCB requires both a pre- and post-development Best Management Practices Plan (BMPs). This means that a water quality treatment plan for the pre- and post-developed Project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES) if a project would impact greater than one acre of surface area. That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES discussion in the regulatory setting section of Chapter 10 of this EIR). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan. While SWMPs are complex, some of the basics include that 85 percent or greater of all stormwater falling on impervious surfaces must be treated prior to being discharged from the Project site. Similarly, the SWMP must demonstrate hydromodification such that the runoff from the Project site is equivalent or improved from the pre-developed condition.

Please note that post construction BMPs are a relatively new science, and the RWQCB continually updates its requirements to remain consistent with evolving technologies. Hence,

it will be important that applicants contract with an engineering firm that has direct experience with both preparing SWMPs and with working with the RWQCB to meet its BMP requirements.

Applicability to Proposed Project

Since any “threat” to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed Project and during the bridge improvement activities to ensure that there are no impacts to “receiving waters.” As there will be no formal Clean Water Act Section 401 permitting loop required for this project, implementation and enforcement of the SWMP will fall to the City of San Rafael pursuant to RWQCB’s Municipal Storm Water Permitting Program (see section below).

The Project site currently does not have a stormwater drainage system, and no municipal provision for stormwater management exists on the site. Rather the property relies on natural flow and the existing man-made drainages to convey stormwater runoff to the airport pump station where it is then pumped via a pipe into the North Fork of Gallinas Creek. Therefore, when the property is developed, a stormwater management plan/program will need to be implemented to address storm water run-off and treatment.

CALIFORNIA DEPARTMENT OF FISH AND GAME PROTECTIONS

Section 1602 of California Fish and Game Code

Pursuant to Section 1602 of the California Fish and Game Code, California Department of Fish and Game (CDFG) regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFG typically considers to include its riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFG prior to commencing work in the stream. However, prior to authorizing such permits, CDFG typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans. Finally, it should also be noted that prior to issuing a SBAA, CDFG will require submittal of a Notice of Determination from the City of San Rafael, indicating that the proposed Project has completed a CEQA review.

Applicability to Proposed Project

The applicant received a 1602 Lake and Streambed Alteration Agreement from CDFG on June 9, 2006 (Notification Number: 1600-2006-0266-3) authorizing the proposed bridge improvement work. The SBAA details the authorized activities, and provides specific terms and conditions for this project. The work period for completing this project is restricted to

July 15th through October 15th during periods of low stream flow and dry weather. The SBAA expires on December 31, 2008.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

The CEQA significance criteria for assessing impacts to biological resources are presented below under the Impacts Analysis heading. Section 15380 of CEQA specifically defines “endangered” species as plant or animal species whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. “Rare” species are defined by CEQA as plant or animal species that exist in such low numbers that: a) they could become endangered if their environment or habitat worsens; or, b) the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered “threatened” as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will “substantially affect a rare or endangered species of animal or plant or the habitat of the species.” The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

Applicability to the Proposed Project

The City of San Rafael is processing this EIR for the proposed Project. This DEIR biology section fully addresses all potential impacts to sensitive biological resources including potential impacts to wetlands, and special status plants and animals. All potential impacts to biological resources are mitigated to a level regarded as less than significant pursuant to the CEQA.

METHODOLOGY

BACKGROUND RESEARCH

Prior to preparing the biological resource analysis report, M&A researched the most recent version of the CDFG Natural Diversity Database, RareFind 3.1 application (CNDDDB 2007) for historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare) known to occur within ten miles of the Project site area. M&A also searched the 2007 electronic version of the California Native Plant Society’s (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2001) for records of special-status plants known in the region of the Project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the Project site or within an area of affect.

As part of the background research for the preparation of the biological resource analysis report, M&A reviewed the *San Rafael Airport Recreational Facility Initial Study/Mitigated Negative Declaration* dated January 27, 2006, the *Draft Biological Assessment* prepared by WRA (Wetland Research Associates) dated February 2005, and the *Jurisdictional Area Delineation* report prepared by WRA dated September 2005. In addition, M&A reviewed the transcripts of the public comments and other public comment letters received during the public comment period and public hearings held in 2006 for the proposed Project. Finally, M&A reviewed other reports, such as the *Distribution of California Clapper Rails in the Gallinas Creek System* report prepared by Avocet Research Associates in 2006, and additional documentation that pertains to the proposed San Rafael Airport Recreational Facility.

RECONNAISSANCE SURVEYS

On January 23, 2007 M&A biologist Mr. Geoff Monk conducted a reconnaissance site survey of the Project site to evaluate the project's site potential to support federally listed species. The survey involved searching all habitats on the site and recording all plant and wildlife species observed. On October 10, 2007, M&A biologist Ms. Isabelle de Geofroy conducted another general survey of the Project site to record plant communities and species. M&A biologists also noted potential habitats on or adjacent to the Project site that could support special-status species. In addition, on November 30, 2007 M&A biologist Ms. Hope Kingma conducted a site survey to examine and document areas within the Project site and immediately adjacent to the Project site that would be regulated by the U.S. Army Corps of Engineers (Corps) and/or the Regional Water Quality Control Board (RWQCB) as waters of the United States and/or State, respectively. Finally, Ms. Kingma examined the site to evaluate potential impacts to stream channels that are regulated by the California Department of Fish and Game (CDFG) pursuant to Section 1602 of the Fish and Game Code.

CLAPPER RAIL SURVEYS

Owing to the known presence of California clapper rail (*Rallus longirostris obsoletus*) in the vicinity of the Project site, M&A requested authorization to conduct protocol surveys for California clapper rail in a formal request submitted to Mr. Ryan Olah of USFWS on January 25, 2007. M&A received permission from Mr. Jim Browning of USFWS via an email on February 5, 2007 to conduct protocol surveys following the methods described in the Survey Plan developed by M&A, consistent with the 2000 USFWS Draft Survey Protocol for California Clapper Rail (USFWS 2000). The survey was conducted to determine if the California clapper rail could be using the Project site and to further identify California clapper rail activity patterns along the North Fork of Gallinas Creek located adjacent to the Project site.

On February 5, 2007, prior to conducting the first protocol survey at the Project site, M&A staff conducted a reference site visit to the Palo Alto Baylands Nature Preserve. The Palo

Alto Baylands Nature Preserve provides easy access to marsh habitats via a boardwalk and supports many California clapper rails which can typically be observed and heard calling in the mornings and evenings. During this reference site visit, California clapper rails were observed within 5 feet and many different calls were heard, refreshing M&A biologists' clapper rail survey skills.

The field surveys were conducted following guidelines consistent with the 2000 USFWS Draft Survey Protocol for California Clapper Rail. In accordance with this survey protocol, M&A staff conducted protocol call count surveys once a week for five weeks. Surveys were conducted by M&A USFWS-authorized biologists, including Mr. Monk, Mr. Jon Winter, Dr. Monte Kirven, Ms. Kingma, Ms. Kimberly DeBriansky, Ms. Melisa Anderson, and Ms. Stephanie Tornberg. Protocol surveys were conducted on February 5, February 14, February 20, March 5, and March 15, 2007. All surveys were conducted at sunset and began 1 1/4 hours prior to sunset and ended 45 minutes after sunset. Tides during the surveying periods were all well below the protocol limit of 4.5 feet NGVD, ranging from -0.5 to 3.8 feet NGVD as published in the "Salt Water Tide Tables" which were then corrected to best approximate the Project site location.

Five listening stations were established approximately 100 to 150 meters apart along the North Fork of Gallinas Creek. Listening stations were located on the levee along the top-of-bank, rather than in the marsh, to minimize disturbance to the marsh habitat. Since the marsh habitat is limited to a fringe tidal wetland along the sides the North Fork of Gallinas Creek (the habitat is linear), stations were established no more than 150-meters apart in accordance with the USFWS approved survey plan.

All rail vocalizations or visual sightings were noted on the datasheets and accurately mapped on a detailed map of the marsh. Weather information, including temperature, wind velocities and direction, were recorded for each survey. Information on disturbances (e.g., dogs or cats in marsh and aircraft flyovers) occurring during the surveys, along with other wildlife species observed during surveys, were also recorded. Observers compared maps at the end of each survey to determine overlap in detections and to create a master map showing all pairs and individuals located during the survey. A final master map was developed once all surveys were completed, showing the dates and locations of detections.

In addition to the required protocol surveys, two follow-up surveys were conducted by Mr. Monk and Ms. Anderson on May 2 and July 2, 2007 in order to better determine exact nesting locations and determine nesting success. These follow-up surveys were conducted around sunset and observers were located within 100 meters of breeding/nesting activities. Observers slowly walked around during these latter surveys in order to better observe clapper rail behavior and determine nesting territory size and locations within the North Fork of Gallinas Creek tidal zone. Since the clapper rails' nesting activities were on the north side of the North Fork of Gallinas Creek, on the opposite bank from the Project site, and the clapper rails seemed to be well acclimated to a high degree of human activity on that side of the

creek, thus, M&A was not concerned about disturbing nesting birds during our non-invasive (non-vocal) surveys from the south bank of the North Fork of Gallinas Creek.

MONARCH BUTTERFLY SURVEY

On November 30, 2007, Ms. Kingma and Ms. Anderson conducted a site survey to determine if the red gum eucalyptus trees (*Eucalyptus camaldulensis*) along the northern edge of the Project site provide winter roost habitat for Monarch butterflies (*Danaus plexippus*). During this survey all trees on the Project site and adjacent properties were checked for roosting Monarch butterflies. High-power (10 x 42 power) binoculars were used by biologists to scan trees on and in the vicinity of the Project site.

The results of the background research and field surveys are provided below.

RESULTS OF RESEARCH AND PROJECT SITE SURVEYS

SOILS

Soils on the Project site as mapped by the Soil Conservation Service (SCS) (USDA 1985, NRCS 2007) are shown in Figure 4 of the M&A Biology Report located in **Appendix E**. Two soil units are mapped on the site: Xerorthents, fill (#203), and Novato Clay (#147). Novato Clay is a hydric soil (form in wetlands), whereas Xerorthents are non-hydric (NRCS 2007).

Xerorthents, fill

This soil type is generally characterized as fill material, and is found on valley floors, on cut toe slopes, and in tidelands or bay areas that are covered with fill. Elevation is 0 to 500 feet. Xerorthents consist of cut or fill areas, or both, that vary greatly in depth and drainage. The fill areas consist of soil, gravel, broken cement, asphalt, rock, bay mud, and other material from urban construction. In some places, the original soils have been graded and the layers mixed. Inclusions in this soil unit are small areas of soils adjacent to the bay that are subject to brief periods of flooding during storms and high tides.

The properties of Xerorthents are highly variable because of the kinds and amount of fill material in the profile or because of the amount of cutting and grading of the soils. Runoff is rapid and the hazard of water erosion is slight. This soil type/unit is used for home sites, urban and recreational development. The main limitations are the susceptibility of the soils to subsidence and the hazard of erosion.

Novato clay

Novato clay is a deep, very poorly drained soil in saltwater marshes along the edges of San Pablo Bay. It formed in alluvium derived from various kinds of rock. Slope is 0 to 2 percent.

The native vegetation is mainly cordgrass (*Spartina* sp), saltgrass (*Distichlis spicata*) and pickleweed (*Salicornia* sp.). Elevation is 2 to 10 feet.

Typically the surface layer is light gray and gray clay about 15 inches thick. The upper 12 inches of the underlying material is gray clay, and the lower part to a depth of 60 inches or more is gray and light gray clay. Included in this unit are small areas of soils that are similar to this Novato soil but are strongly acid throughout. Also included are small areas of Novato soils that are east of San Rafael and have an over-wash of loam or gravelly loam.

Permeability of this Novato soil is slow. Effective rooting depth is 60 inches or more for water-tolerant plants. A high water table is at or near the surface throughout the year. The soil is saturated during periods of high tide. This soil type/unit is used for wildlife habitat.

TOPOGRAPHY AND HYDROLOGY

The Project site is protected from flooding from the North and South Fork of Gallinas Creeks by a 4 to 6 foot high levee around the perimeter of the airport property. The land within the levees is 0 to 3 feet above mean sea level and the levees are approximately 9 feet above mean sea level (City of San Rafael 2006).

The majority of the Project site topography is level. There are several wetland areas located immediately north of the proposed Project area (*i.e.*, outside the Project site envelope), as shown on the Corps-verified Map of Jurisdictional Areas prepared by WRA (**Figure 7-1**). Some of these wetland areas appear to have developed as a result of seepage from the levee along the North Fork of Gallinas Creek; during high tide events these areas become saturated. These areas would likely be within the U.S. Army Corps Engineers' jurisdiction pursuant to Section 404 of the Clean Water Act; however, these areas have not been verified by the Corps, since they are outside of the project area. Regardless, the wetland areas that occur north of the Project site will not be affected by the proposed Project. In addition, there are several shallow topographic low areas within the proposed Project area; however, these areas are not subject to the U.S. Army Corps Engineers jurisdiction pursuant to Section 404 of the Clean Water Act, as indicated on the Map of Jurisdictional Areas that was verified by the U.S. Army Corps Engineers on December 14, 2006.

Several man-made drainage ditches occur around the outer perimeter of the proposed Project area, as shown on the aerial photograph in **Figure 3-2** and the Site Plan shown on **Figure 3-3**. These ditches were excavated in dry land to ensure that the airport runway and facility do not flood during major storm events. The ditches collect stormwater runoff from the upland areas of the airport site. The ditches appear to be regularly maintained and vegetation is frequently removed. Following storm events, excess water drains into the main ditch that is located along the southern Project site boundary, parallel to the runway. This ditch is 5 to 6 wide between the top of banks, and is incised 3 to 4 feet below the existing grade. Water flows from the southwest to the northeast along this ditch. The ditch then curves to the

northwest, and then parallels the North Fork of Gallinas Creek until it drains via a culvert under a gravel maintenance road to the pump station, as shown on the site plan (**Figure 3-3**). The pump station is located at the base of the levee on the north side of the Project site. There is a large open water area at the base of the pump station that serves as a flood storage area before the pump transports the water via a pipe over the levee and releases it into the North Fork of Gallinas Creek.

There is a smaller two-foot wide ditch that occurs along the northern edge of the row of eucalyptus. This relatively shallow ditch appears to drain from a low area in the western corner of the Project site towards the flood storage area at the base of the pump station. These ditches are not subject to the U.S. Army Corps Engineers' jurisdiction pursuant to Section 404 of the Clean Water Act according to the Corps-verified WRA map that indicates the extent of the Corps' jurisdiction on the Project site (**Figure 7-1**). The Corps determined that the ditches are man-made features that were excavated in uplands specifically to drain upland areas and thus are not jurisdictional. These ditches appear to only convey flows following storm events.

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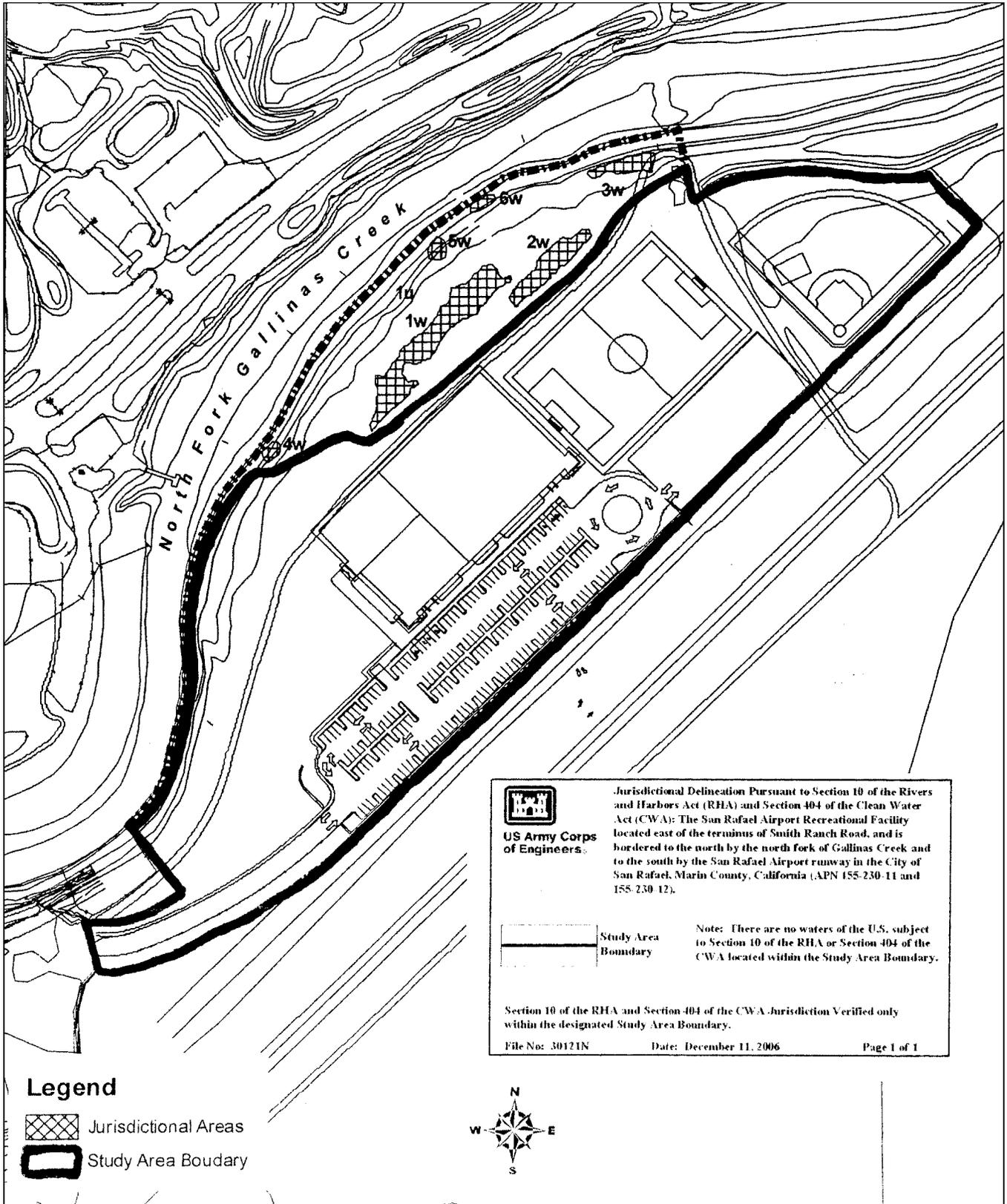


Figure 7-1
Wetland Delineation Map
Verified by Army Corps of Engineers



Source: WRA



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PLANT COMMUNITIES AND ASSOCIATED WILDLIFE HABITATS

A complete list of plant species observed on the Project site and in the habitats immediately adjacent to the Project site, such as the North Fork of Gallinas Creek, is presented in Table 1 of the M&A Biology Report, located in **Appendix E** of this document. Nomenclature used for plant names follows *The Jepson Manual* (Hickman 1993) and changes made to this manual as published on the Jepson Interchange Project website (<http://ucjeps.berkeley.edu/interchange/index.html>). Table 2 of the M&A Biology Report lists wildlife species observed on the Project site and in the habitats immediately adjacent to the Project site, such as the North Fork of Gallinas Creek. Nomenclature for wildlife follows CDFG's *Complete list of amphibian, reptile, bird, and mammal species in California* (CDFG 2006) and any changes made to species nomenclature as published in scientific journals since the publication of CDFG's list.

Three plant communities occur on or immediately adjacent to the proposed Project site. The dominant plant community of the Project site is an anthropogenic (man-made) community. Salt marsh habitats occur along the North Fork of Gallinas Creek immediately north of the Project site and along the drainage ditches that occur along the perimeter of the site, and wetlands are located in the ruderal grassland north to the Project site area. These plant communities are discussed below. Plants listed in the community descriptions were observed onsite during M&A's 2007 surveys.

Anthropogenic Communities

Ruderal (weedy) communities are assemblages of plants that thrive in waste areas, roadsides and other sites that have been disturbed by human activity. The majority of the Project site is highly disturbed. Several large open fields located immediately to the north of the airport runway are subject to frequent mowing and disking. North of these fields are smaller areas of ruderal grassland at the base of the flood protection levee. These areas are also subject to ongoing, but less frequent mowing. Common ruderal species observed on and adjacent to the Project site in these ruderal grassland habitats include non-native annual grasses, such as wild oats (*Avena fatua*), ripgut grass (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), and Italian ryegrass (*Lolium multiflorum*). Forbs detected in the ruderal fields include Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), yellow star thistle (*Centaurea solstitialis*), wild radish (*Raphanus sativus*), and everlasting cudweed (*Pseudognaphalium luteoalbum*).

The levee along the North Fork of Gallinas Creek is dominated by upland ruderal species such as jointed charlock (*Raphanus raphanistrum*), wild radish (*Raphanus sativus*), black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulgare*), mallow (*Malva* sp.), wild oats, and Italian ryegrass. This levee is also subject to ongoing mowing to control vegetation.

In many areas of California, non-native trees were planted for agricultural or ornamental purposes, to serve as windbreaks, or for firewood and lumber. A long row of red gum (*Eucalyptus camaldulensis*) is located along the northern Project site boundary, just south of the creek levee.

Typically, anthropogenic influenced communities provide habitat for those animal species adapted to man. Examples of animals associated with these communities include Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), European starling (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), western scrub jay (*Aphelocoma californica*), and Brewer's blackbird (*Euphagus cyanocephalus*), all of which have been observed on the Project site. Flocks of grassland bird species, such as western meadowlark (*Sturnella neglecta*), golden-crowned sparrow (*Zonotrichia atricapilla*) and white-crowned sparrow (*Zonotrichia leucophrys*) were also observed foraging in the fields north of the airport runway on the Project site. The ruderal grasslands also provide foraging opportunities for northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), and red-tailed hawks (*Buteo jamaicensis*), all of which have been observed flying over the Project site. Mammals associated with the ruderal grasslands on the Project site include California meadow vole (*Microtus californicus*), black-tailed hare (*Lepus californicus*), Columbian black-tailed deer, coyote (*Canis latrans*), and striped skunk (*Mephitis mephitis*).

Salt Marsh

Salt marshes occur in discrete locations along the California coastline, in bays and other areas that are protected from the wave action of the open ocean. Plant species diversity in salt marshes tends to be low relative to other communities, as few species can tolerate the waterlogged, saline, often clayey soils with low oxygen concentration (Holland & Keil, 1995). This community is influenced by tidal elevations which results in distinct marsh zonation; the low salt marsh zone is typically dominated by cordgrass (*Spartina* spp.) stands, the middle salt marsh zone supports pickleweed (*Salicornia* sp.) and other halophytic (salt-tolerant) species, and the upper salt marsh zone commonly supports gumplant (*Grindelia* sp.), salt grass, and other species commonly associated with higher ground (Goals Project 2000).

Immediately north to the Project site, salt marsh habitats occur in a linear strip along either side of the North Fork of Gallinas Creek. The width of the marsh vegetation varies between 10 and 65 feet wide on the south side of the creek, and 15 to 100 feet wide on the north side of the creek. Salt marsh vegetation also occurs in scattered locations along the drainage ditches that occur on the outer perimeter of the Project site; however, this vegetation is likely removed on a regular basis to maintain these ditches. Dominant species found within the salt marsh community in the North Fork of Gallinas Creek includes Pacific cordgrass (*Spartina foliosa*), pickleweed (*Salicornia virginica*), gumplant (*Grindelia hirsutula*), spearscale (*Atriplex triangularis*), and bulrush (*Bolboschoenus maritimus* ssp. *paludosus*). Other salt

marsh and wetland-associated species observed include saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), and broad-leaf peppergrass (*Lepidium latifolium*).

Salt marsh communities support a rich diversity of wildlife. Subtidal vegetation beds shelter larval and juvenile fish, as well as many species of invertebrates. Resident birds observed in the salt marsh habitat along the North Fork of Gallinas Creek include the California clapper rail, marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), green heron (*Butorides virescens*), and black-crowned night heron (*Nycticorax nycticorax*). Mammals observed in the salt marsh habitat along the North Fork of Gallinas Creek include northern river otter (*Lontra canadensis*) and muskrat (*Ondatra zibethicus*).

Although relatively few bird species are year-round residents of Gallinas Creek and the associated salt marsh habitat, many species temporarily inhabit this community during their annual migrations. Coastal California is part of the Pacific Flyway, one of the four principal bird migration routes in North America. During the spring and fall months, the salt marsh and open water habitats along the North Fork of Gallinas Creek support waterbirds including Clark's grebe (*Aechmophorus clarkii*), pied-billed grebe (*Podilymbus podiceps*), mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), northern shoveler (*Anas clypeata*), lesser scaup (*Aythya affinis*), bufflehead (*Bucephala albeola*), and ruddy duck (*Oxyura jamaicensis*). Raptors such as American kestrel (*Falco sparverius*), northern harrier, Cooper's hawk (*Accipiter cooperii*) and merlin (*Falco columbarius*) were observed hunting over the salt marsh habitats adjacent to the Project site.

Wetlands

Seasonal wetlands are habitats that may appear dry in the summer and fall months, but by the first winter rains become inundated and hold water for a period of several weeks to months at a time. Seasonal wetlands are able to hold water for a long duration typically due to the presence of impervious soils and/or confining topography such as topographic low areas. Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic (absence of free oxygen) conditions within the upper part of the soil profile. Owing to soils with high clay content or that otherwise are mostly or partially impervious, any time depressional topography occurs on a site or is created through man's activities, these areas retain seasonal rainfall over short to long durations of the winter and spring. Such areas eventually are colonized by seasonal wetland plants and otherwise persist as seasonal wetlands.

Several topographic depressions that support wetland vegetation were mapped by WRA in the area just north of the proposed Project site. The wetlands are dominated with hydrophytic plant species such as common knotweed (*Polygonum aviculare*), annual beard grass (*Polypogon monspeliensis*), Harding grass (*Phalaris aquatica*), spearscale (*Atriplex*

triangularis), bird's foot trefoil (*Lotus corniculatus*), alkali heath (*Frankenia salina*), sand-spurrey (*Spergularia bocconi*), Mediterranean barley and saltgrass.

Seasonal wetlands provide wildlife with a seasonal water source. Amphibians such as the Pacific tree frog (*Hyla regilla*) will lay their eggs in seasonal wetland habitats and complete their life cycle in the wetlands. Invertebrates such as mayflies (Ephemeroptera), damselflies (Odonata), and predaceous diving beetles (Dytiscidae) are commonly associated with inundated seasonal wetland habitats and complete their life cycle in the wetlands.

As discussed above under the regulatory requirements pertaining to waters of the U.S., the U.S. Army Corps of Engineers visited the Project site on October 26, 2006 and verified the *Jurisdictional Area Delineation* report prepared by WRA in a letter dated December 14, 2006. The Corps' jurisdictional determination will expire in five years from the date of the letter. **Figure 7-1** provides a copy of the Corps' verified delineation map that shows the extent of Corps jurisdiction on the proposed Project site. A copy of the Corps letter is also provided in **Appendix E**.

SPECIAL-STATUS SPECIES

DEFINITIONS

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq.*; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);
- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);
- plants and animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;
- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of CNPS' *Electronic Inventory* (CNPS 2001). The California Department of Fish and Game (CDFG) recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFG requests their inclusion in EIRs. Plants occurring on CNPS Lists 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information;

- migratory nongame birds of management concern listed by U.S. Fish and Wildlife Service (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);
- animals that are designated as “species of special concern” by CDFG (2006);
- Animal species that are “fully protected” in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

In the paragraphs below provide further definitions of legal status are provided as they pertain to the special-status species discussed in this chapter or in the attached tables.

Federal Endangered or Threatened Species. A species listed as Endangered or Threatened under the FESA is protected from unauthorized “take” (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a Federal listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

State Threatened Species. A species listed as Threatened under the state Endangered Species Act (§2050 of California Fish and Game Code) is protected from unauthorized “take” (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to “take” a state listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFG prior to initiating the “take.”

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered “rare.” Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a “significant effect on the environment” (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS List Species. The California Native Plant Society (CNPS) maintains an inventory of special status plant species. This inventory has four lists of plants with varying rarity. These lists are: List 1, List 2, List 3, and List 4. Although plants on these lists have no formal legal protection (unless they are also state or federal listed species), the California Department of Fish and Game requests the inclusion of List 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. List 1 species have the highest priority: List 1A species are thought to be extinct, and List 1B species are known to still exist but are considered “rare, threatened, and endangered in California and elsewhere.” All of the plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for state listing (CNPS 2001). List 2 species are rare in California, but more common elsewhere. Lists 3 and 4 contain species about which there is some concern, and are review and watch lists,

respectively. Additionally, in 2006 CNPS updated their lists to include “threat code extensions” for each list. For example, List 1B species would now be categorized as List 1B.1, List 1B.2, or List 1B.3. These threat codes are defined as follows: .1 is considered “seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)”; .2 is “fairly endangered in California (20-80% of occurrences threatened)”; .3 is “not very endangered in California (less than 20% of occurrences threatened or no current threats known).”

Under the CEQA review process only CNPS List 1 and 2 species are considered since these are the only CNPS species that meet CEQA’s definition of “rare” or “endangered.” Impacts to List 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be “taken” or possessed (i.e., kept in captivity) at any time.

Protected Amphibians. Under Title 14 of the California Code of Regulations (14 CCR 41), protected amphibians, such as the California tiger salamander, may only be taken under special permit from California Department of Fish and Game issued pursuant to Sections 650 and 670.7 of these regulations.

POTENTIAL SPECIAL-STATUS PLANTS SPECIES

Figure 7-2 provides a graphical illustration of the closest records for special-status plant species within 10 miles of the Project site and helps readers visually understand the number of sensitive plant species that are known to occur in the vicinity of the Project site. No special-status plants have been mapped on or adjacent to the Project site. However, according to the CNPS *Inventory* and CDFG’s CNDDDB, a total of 55 special-status plant species are known to occur in the region of the Project site. A discussion of each special-status plant considered for the Project site individually, taking into consideration their habitat requirements, is provided in Table 3 of the M&A biological resource analysis report located in **Appendix E** of this EIR. The plants listed in Table 3 of the M&A biological resource analysis report occur in specialized habitats that do not occur on the Project site, such as vernal pools, alkaline soils, serpentine soils, freshwater and coastal marsh, chaparral, coastal prairie, broad-leaf upland forest, northern coniferous forest and riparian woodland. Thus, these plants would not be expected to occur on the Project site. Additionally, owing to the excessively disturbed and unnatural conditions found at the Project site, special-status plants would not likely occur. The ruderal habitats on the site are routinely disked and mowed, and the man-made ditches on the site are frequently cleaned out of vegetation to maintain flows. Thus, there are no habitat areas on the Project site that would likely support special-status plants. Consequently, Monk & Associates biologists conclude that the proposed Project will not likely result in impacts to special-status plants.

POTENTIAL SPECIAL-STATUS WILDLIFE SPECIES

Figure 7-3 provides a graphical illustration of the closest records for special-status wildlife species known to occur within 10 miles of the Project site and helps readers visually understand the number of sensitive wildlife species that occur in the vicinity of the Project site. A total of 32 special-status wildlife species are known to occur in the region of the Project site. These species are listed in Table 4 of the M&A biological resource analysis report located in **Appendix E**. Many of these species require specialized habitat such as coastal dunes, freshwater creeks, riparian habitats, or other habitats that are not found on or adjacent to the Project site. Hence these species can be dismissed from consideration. Because of the sensitivity of some of the listed special-status wildlife species known to occur in the area, and/or the potential presence of some of the species on or immediately adjacent to the Project site, 21 of these species are discussed further below.

Monarch Butterflies

Monarch butterfly is not protected pursuant to either the State or Federal Endangered Species Acts, nor does it have any other special legal designation. However, in Northern Canada, the United States and in Mexico, there are various organizations which endeavor to protect Monarch butterflies. In California, CDFG treats their migration overwintering roost sites as sensitive. Monarch butterflies have one of the world's most fascinating migration paths. Every fall, thousands of these black-and-orange butterflies fly west to their wintering grounds in California and Mexico. The remarkable sight attracts scores of tourists. Pacific Grove, California has earned the nickname "Butterfly Town, U.S.A." for the host of Monarchs that gather there every year. In the spring, usually by mid to late March, the butterflies fly back to their summer homes where they lay their eggs and die. Each autumn, thousands of Monarch butterflies gather in southern Canada to migrate south. Some of these butterflies travel over 2,900 kilometers, just to overwinter in places such as Michoacan, Mexico, in a small town called Angangueo. Other Monarch butterflies also overwinter in Cuba and in California. Today thousands of people tag monarchs in an effort to study their migration.

There is a known winter roost site at China Camp State Park (CNDDDB Occurrence No. 20). That roosting site is located 3.2 miles southeast of the Project site. Historical evidence suggests that location has been a Monarch butterfly over-wintering site for decades. Eucalyptus trees are the roost substrate used at that location. No clusters of Monarch butterflies were observed in the eucalyptus tree on the proposed Project site during the November 2007 survey conducted for this species. The eucalyptus trees on the Project site may not provide the dense groupings of trees that provide the windbreak cover that Monarchs apparently need to provide them protection while overwintering. Accordingly, it is most unlikely that a development project on this site and removal of these trees would affect this butterfly species.

Coho Salmon – Central California ESU

Along the U.S. West Coast, there are 7 distinct groups, or evolutionarily significant units (ESUs), of Coho salmon (*Oncorhynchus kisutch*). Each ESU is treated as a separate species under the Endangered Species Act. The Central California ESU was listed as a federally as a threatened species on October 31, 1996 and later reclassified as an endangered species in June 28, 2005. The ESU includes all naturally spawned populations of Coho salmon from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system. Coho salmon was listed as a state endangered species on February 4, 2004.

Coho salmon belong to the family Salmonidae and are one of eight species of Pacific salmonids in the genus *Oncorhynchus*. Coho salmon are anadromous (adults migrate from a marine environment into freshwater streams and rivers of their birth) and semelparous (spawn only once and then die). Coho spend approximately the first half of their life cycle rearing in streams and small freshwater tributaries. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean prior to returning to their stream of origin to spawn and die. Most adults are three-year old fish, however, some precocious males known as “jacks” return as two-year old spawners. A returning adult may measure more than two feet in length and weigh an average of eight pounds.

The closest known record for Coho salmon is located in Lagunitas Creek, approximately 6.5 miles west of the Project site (CNDDDB Occurrence No. 9). While there is no habitat for Coho salmon or other fisheries on the proposed Project site, there is a potential that Coho salmon occasionally occur in the North Fork of Gallinas Creek adjacent to the Project site. Since the proposed Project will not impact to habitats along Gallinas Creek, implementation of the proposed Project is not expected to result in direct impacts to this species; however, the proposed Project could result in potential indirect impacts to Coho salmon in the North Fork of Gallinas Creek. This would be a potentially significant impact pursuant to CEQA. Implementation of various mitigation measures will reduce potential project-related impacts to Coho salmon to a level considered to be less than significant (see Impacts and Mitigation discussion).

Steelhead Trout – Central California Coast ESU

There are 15 distinct groups, or evolutionarily significant units (ESUs), of steelhead trout (*Oncorhynchus mykiss*) in Washington, Oregon, Idaho and California. The Central California Coast ESU was listed as a federally threatened species on August 18, 1997, and its threatened status was reaffirmed on January 5, 2006. This species has no state status. The ESU includes all naturally spawned anadromous steelhead populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Also included in

the ESU are populations in tributary streams to Suisun Marsh including Suisun Creek, Green Valley Creek, excluding the Sacramento-San Joaquin River Basin.

Steelhead are the anadromous form of rainbow trout, a salmonid species native to western North America and the Pacific Coast of Asia. Steelhead are similar to some Pacific salmon in their life cycle and ecological requirements. They are born in freshwater streams, where they spend their first one to three years of life. They then emigrate to the ocean where most of their growth occurs. After spending between one to four growing seasons in the ocean, steelhead return to their native freshwater stream to spawn. Unlike Pacific salmon, steelhead do not necessarily die after spawning, and are able to spawn more than once. In California, most steelhead spawn from December through April in small streams and tributaries where cool, well oxygenated water is available year round.

The closest CNDDDB record for steelhead is located in Lagunitas Creek, approximately 6.7 miles west of the Project site (CNDDDB Occurrence No. 6). In addition, steelhead are known to occur in Miller Creek, located just north of the Gallinas Creek watershed. The Project site appears to be located just outside of the designated critical habitat area associated with the Miller Creek watershed. While there is no habitat for steelhead or other fisheries on the proposed Project site, there is a low potential that steelhead occur in the North Fork of Gallinas Creek adjacent to the Project site. Since the proposed Project will not impact to habitats along Gallinas Creek, implementation of the proposed Project is not expected to result in direct impacts to this species; however, the proposed Project could result in potential indirect impacts to steelhead in the North Fork of Gallinas Creek. This would be a potentially significant impact pursuant to CEQA. Implementation of various mitigation measures will reduce potential project-related impacts to steelhead to a level considered to be less than significant (see Impacts and Mitigation discussion).

California Clapper Rail

The California clapper rail was federally listed as an endangered species throughout its entire range on October 13, 1970 (Federal Register 35: 1604). Critical habitat has not been designated for this species. It was state listed as an endangered species on June 6, 1971. The California clapper rail is one of the largest rails (13 to 19 inches from bill to tail). It is characterized by its hen-like appearance and a long, slightly downward-curving bill. The breeding season of California clapper rails begins in February, with nesting starting in mid-March and usually extends into the middle of May. The end of the breeding season is typically defined as the end of August, which corresponds with the time when eggs laid during re-nesting attempts have hatched and young are mobile (USFWS 2003). Clapper rails are known to be monogamous, and will defend year-round territories (Goals Project 2000).

Clapper rails are secretive and difficult to observe in dense vegetation. When evading discovery, they typically freeze, hide in small sloughs or under overhangs, or run rapidly through vegetation or along slough bottoms. They prefer to walk or run and generally walk

upright. When flushed, they normally fly only a short distance before landing. They can swim well, although swimming is only used to cross sloughs or escape immediate threats at high tide. Clapper rails are most active in early morning and late evening, when they forage in marsh vegetation along sloughs and mudflat edges. They often roost in the upper marsh vegetation at high tide during the day (USFWS 2003).

Throughout their distribution, California clapper rails occur within a range of salt and brackish marshes. In south and central San Francisco Bay and along the perimeter of San Pablo Bay, California clapper rails typically inhabit salt marshes dominated by pickleweed (*Salicornia virginica*) and cordgrass (*Spartina* spp.) stands. Pacific cordgrass (*Spartina foliosa*) and the non-native cordgrass species, such as (*Spartina alterniflora*) and the hybrids, dominate the middle marsh zone throughout the south and central Bay. In the North Bay (Petaluma Marsh, Napa-Sonoma marshes, Suisun Marsh), California clapper rails also live in tidal brackish marshes which vary significantly in vegetation structure and composition. Use of brackish marshes by California clapper rails is largely restricted to major sloughs and rivers of San Pablo Bay and Suisun Marsh, and along Coyote Creek in south San Francisco Bay. California clapper rails have rarely been recorded in non-tidal marsh areas (USFWS 2003).

California clapper rails are now restricted almost entirely to the marshes of San Francisco estuary, where the only known breeding populations occur. In South San Francisco Bay, there are populations in all of the larger tidal marshes. Distribution in the North Bay is patchy and discontinuous, primarily in small, isolated habitat fragments. Small populations are widely distributed throughout San Pablo Bay. They are present sporadically and in low numbers at various locations throughout the Suisun Marsh Area (Carquinez Strait to Browns Island, including tidal marshes adjacent to Suisun, Honker, and Grizzly Bays) (USFWS 2003).

M&A searched the California Department of Fish and Game's most current version of the California Natural Diversity Database (CNDDDB) for records of California clapper rail in the vicinity of the Project site (Figure 7). The closest known record for California clapper rail is located less than 0.1 mile from the proposed San Rafael Airport Recreation Facility Project site (CNDDDB Occurrence No. 62). This record includes both the South and North Fork of Gallinas Creek along with a section of the marsh along the San Pablo Bay. Breeding and wintering adults were recorded at this location from 1971-1975, 1985-1986, 1989, 2003, and 2004 (CNDDDB 2007).

M&A also reviewed a report prepared by Avocet Research Associates entitled *Distribution of California Clapper Rails in the Gallinas Creek System* (dated February 22, 2006). That report provides information regarding a 2004 clapper rail survey conducted along Gallinas Creek by Avocet Research Associates. Two survey points (listening stations) for that survey were located adjacent to the project area. Rails were detected at greater than 200 meters from each of these survey points.

M&A conducted USFWS-approved protocol clapper rail surveys along the North Fork of Gallinas Creek on February 5, February 14, February 20, March 5, and March 15, 2007. At least one clapper rail was observed or heard during every survey date. **Figure 7-5** displays where clapper rails were observed or heard during the protocol survey. Two pairs of clapper rails were consistently observed or heard in the North Fork of Gallinas Creek near the Project site during the survey. In March, the activity of these two pairs of clapper rails were mostly confined or centered on two areas on the north bank of the North Fork of Gallinas Creek on the opposite side of the creek from the Project site. While there is far greater human activity on the north side of the creek relative to the south side of the creek facing the Project site, the rails likely selected these areas for nesting because the band of marsh habitat on the north side of the creek at the two locations is uncharacteristically wide, approximately 100 feet in width.

All clapper rails observations were confined to the tidally influenced portion of the marsh along the North Fork of Gallinas Creek. At no time during the survey were clapper rails ever observed on the levee along the channel nor did they ever venture onto the proposed Project site area. While the uplands along the levees on both sides of the North Fork of Gallinas Creek may provide some refuge for clapper rails during extreme high tides events, these upland areas provide sub-optimal habitat due to the abrupt transition from the marsh vegetation to the levee weedy habitats. Furthermore, the levees are subject to frequent mowing and on-going maintenance activities, and therefore, provide virtually no escape cover for clapper rails.

M&A biologists Mr. Monk and Ms. Anderson met with Dr. Jules Evens from Avocet Research Associates on April 10, 2007 to discuss his clapper rail findings in the area and to compare survey results. Dr. Evens has conducted clapper rail surveys throughout the Gallinas Creek watershed for several years and had previously identified two nesting territories near the project area. Monk & Associates survey findings and locations of California clapper rail activity were consistent with data obtained by Avocet Research Associates. Dr. Evens confirmed that the rails are restricted to the “tidal prism” area of the channel. Furthermore, after noting the consistency of M&A’s data with that of Avocet Research Associates’ data, Dr. Evens was confident that all clapper rails in the area have been detected. Dr. Evens further stated that clapper rails that live in areas with heavy disturbances (similar to the conditions surrounding the Project site) tend to become more habituated and less elusive, such as the Clapper rails are in the vicinity of the Project site.

M&A conducted follow-up California clapper rail surveys on May 2, 2007 to more accurately determine the clapper rail nesting locations along the North Fork of Gallinas Creek, and again on July 2, 2007 to determine the nesting success of the clapper rails identified within the North Fork of Gallinas Creek. M&A believes that the young may have fledged or were near fledging during the May 2nd survey, and that any young that successfully fledged were well fledged by the July 2nd survey. During the May survey, the clapper rails were unusually quiet indicating that they were still nesting and/or that young

had only recently fledged. During the July 2nd surveys one pair of clapper rails and a third rail (presumed to be a fledgling) were very vocal and the adult pair was easily observed. The other pair of clapper rails observed during the March surveys was notably absent. A copy of the Clapper Rail Survey Report that was submitted to the USFWS is provided in **Appendix E**.

Since the proposed Project will not impact marsh habitats along Gallinas Creek, and the uplands adjacent to this creek will be protected, implementation of the proposed Project is not expected to result in impacts to the California clapper rail. There is some potential that without mitigation that the proposed Project could result in indirect impacts to clapper rails that occur along the North Fork of Gallinas Creek. This would be a significant impact pursuant to CEQA. Implementation of prescribed mitigation measures will reduce potential project-related impacts to California clapper rails to a level considered to be less than significant (see Impacts and Mitigation discussion).

California Black Rail

The California black rail (*Laterallus jamaicensis coturniculus*) is a state-listed threatened species. It has no federal status. This rail is quite small, about the size of an American robin, and is blackish in color with a small black bill, a back speckled with white, and a nape of deep chestnut brown. This species is most often associated with upper marsh habitat, particularly pickleweed (*Salicornia* sp.) dominated marshes (Goals Project 2000). Evens and Page (1983) documented that an important component of breeding habitat for this species was dense pickleweed with open structure below the canopy to allow for easy movement and nesting opportunities. This rail nests in marsh vegetation and the breeding season is believed to be primarily in April through May. Evens and Page (1983) suggest that degraded uplands with pedestrian use proximal to the marsh may inhibit the ability for these rails to escape to uplands during high tides.

The majority of the known population inhabits tidally influenced salt marshes of the San Francisco Bay, although some are found in brackish and freshwater marshes (Grinnell 1986, Goals Project 2000). Historically, the California black rail was known from the San Francisco Bay area and the delta of the Sacramento and San Joaquin rivers south along the coast to northern Baja California, in the San Bernardino-Riverside area, at the Salton Sea, and along the lower Colorado River north of Yuma in California and Arizona. Currently, this rail probably is absent as a breeder in coastal Southern California and in the Riverside area. Until 1994, the rail was unknown from the Sacramento Valley except for a winter record at the CDFG Gray Lodge Wildlife Area in Butte County. In 1994, a population of the California black rail was found at the University of California's Sierra Field Station in Yuba County. Systematic surveys in 1997 identified scattered populations in the Sierra foothills (Goals Project 2000).

The closest known record for California black rail is located 0.7 mile southwest of the proposed Project site in a small pickleweed marsh located near the South Fork of Gallinas Creek (CNDDDB Occurrence No. 104). A second record for this species is located 0.8 mile east of the proposed Project site in the marsh along San Pablo Bay where Gallinas Creek empties into the bay (CNDDDB Occurrence No. 84). It is unlikely that this rail is a year-round resident in the narrow band of marsh vegetation that occurs along the North Fork of Gallinas Creek north of the Project site. This rail was not detected during protocol California clapper rails conducted as part of this analysis. Regardless, this rail could occasionally migrate along the North Fork of Gallinas Creek corridor. Since the proposed Project will not impact marsh habitats along Gallinas Creek, and the adjacent uplands will be protected, implementation of the proposed Project is not expected to result in impacts to this species. Mitigation measures are still warranted; however, to ensure that the proposed Project does not result in indirect impacts to this rail species. Such impacts would be regarded as potentially significant pursuant to CEQA. Implementation of various mitigation measures will reduce potential project-related impacts to California black rail to a level considered to be less than significant (see Impacts and Mitigation discussion).

Double-Crested Cormorant

The double-crested cormorant (*Phalacrocorax auritus*) is a California species of special concern. While this designation offers no special legal protection, such species are closely monitored for trends in population numbers. The California Department of Fish and Game is primarily interested in monitoring and protecting their nesting habitat. This species is a colonial nester on coastal cliffs and offshore islands, and along lake margins in the interior of the state.

There is a record of a double-crested cormorant breeding colony located 7.6 miles southeast of the Project site, just north of the mouth of the Russian River (CNDDDB Occurrence No. 24). This species was observed flying over the Project site and may occasionally forage along the North Fork of Gallinas Creek; however, this species is not known to or expected to nest on or near the Project site. Consequently, no significant impacts are expected to occur to this species from implementation of the proposed Project.

Great Blue Heron

Great blue heron (*Ardea herodias*) is a California species of special concern. While this designation offers no special legal protection, such species are closely monitored for trends in population numbers. Its rookery sites (*i.e.*, colonial nest sites) are protected by the State under California Fish and Game Code. This species is a colonial nester in tall trees near foraging areas, such as marshes, lake margins, tidal-flats, rivers, and streams. This species is also known to forage in open fields and cropland.

There is a nesting record for this species located 0.9 mile east of the Project site in San Rafael (CNDDDB Occurrence No. 23). At that location, great blue herons nest in live oaks

(*Quercus* sp) and madrone trees (*Arbutus menziesii*). During M&A's clapper rail surveys several great blue herons were observed foraging along the North Fork of Gallinas Creek; however, this species is not known to nest on or near the Project site. Regardless, preconstruction surveys will be conducted prior to site grading or any tree removal to ensure that if this species nests near the Project site, that it will not be affected by the proposed Project. While impacts to great blue heron nests are unlikely, because of the mobile nature of birds in general such impacts are regarded as potentially significant pursuant to CEQA. Preconstruction nesting surveys should therefore be completed the year the project commences. If great blue herons are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impact and Mitigation Section).

Great Egret

Great egret (*Casmerodius albus*) is a California species of special concern. While this designation offers no special legal protection, such species are closely monitored for trends in population numbers. Its rookery sites (*i.e.*, colonial nest sites) are protected by the State under California Fish and Game Code. It forages for fish, amphibians, and aquatic invertebrates at the margins of lakes, ponds, canals, marshes, ditches, sloughs, and flooded fields. Colonial nest sites (rookeries) are in large trees such as eucalyptus (*Eucalyptus* spp); however this species also known to occasionally nest in shrubby willows (*Salix* sp.) along waterways, or on-top of man-made duck blinds.

There is a rookery site for this species located 4.4 miles southeast of the Project site (CNDDDB Occurrence No. 13). At that location, the colony nests in buckeye (*Aesculus californica*), coast live oak (*Quercus agrifolia*) and coastal scrub. During M&A's clapper rail surveys several great egrets were observed foraging along the North Fork of Gallinas Creek; however, this species is unlikely to nest on the Project site. Regardless, preconstruction surveys will be conducted prior to site grading or tree removal to ensure that if this species nests near the Project site, that it will not be affected by the proposed Project. While impacts to great egret nests are unlikely, because of the mobile nature of birds in general such impacts are regarded as potentially significant pursuant to CEQA. Preconstruction nesting surveys should therefore be completed the year the project commences. If great egrets are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impact and Mitigation Section).

Snowy Egret

Snowy egret (*Egretta thula*) is a California species of special concern. While this designation offers no special legal protection, such species are closely monitored for trends in population numbers. Its rookery sites (*i.e.*, colonial nest sites) are protected by the State under California Fish and Game Code. The snowy egret forages for fish, amphibians, and aquatic invertebrates at the margins of lakes, ponds, canals, marshes, ditches, sloughs, and flooded

fields. Its colonial nest sites (rookeries) are in large trees such as eucalyptus, or along water ways in tall willows.

There is a rookery site for this species located 4.4 miles southeast of the Project site (CNDDDB Occurrence No. 8). At that location, the colony nests in buckeye, coast live oak and coastal scrub. During M&A's clapper rail surveys several snowy egret were observed foraging along the North Fork of Gallinas Creek; however, this species is unlikely to nest on the Project site. Regardless, preconstruction surveys will be conducted prior to site grading or tree removal to ensure that if this species nests near the Project site, that is will not be affected by the proposed Project. While impacts to snowy egret nests are unlikely, because of the mobile nature of birds in general such impacts are regarded as potentially significant pursuant to CEQA. Preconstruction nesting surveys should therefore be completed the year the project commences. If snowy egrets are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impact and Mitigation Section).

Black-Crowned Night-Heron

Black-crowned night-heron (*Nycticorax nycticorax*) is a California species of special concern. While this designation offers no special legal protection, such species are closely monitored for trends in population numbers. Its rookery sites (*i.e.*, colonial nest sites) are protected by the State under California Fish and Game Code. It forages for fish, amphibians, and aquatic invertebrates at the margins of lakes, ponds, canals, marshes, ditches, and sloughs. Its colonial nest sites (rookeries) are in large trees such as eucalyptus, or along water ways in tall willows.

There is a rookery site for this species located 4.4 miles southeast of the Project site (CNDDDB Occurrence No. 8). At this location, the colony nests in buckeye, coast live oak and coastal scrub. During M&A's clapper rail surveys several black-crowned night-heron were observed along the North Fork of Gallinas Creek; however, this species is unlikely to nest on the Project site. Regardless, preconstruction surveys will be conducted prior to site grading or tree removal to ensure that if this species nests near the Project site, that is will not be affected by the proposed Project. While impacts to black-crowned night heron nest sites are unlikely, because of the mobile nature of birds in general such impacts are regarded as potentially significant pursuant to CEQA. Preconstruction nesting surveys should therefore be completed the year the project commences. If black-crowned night-herons are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impact and Mitigation Section).

White-Tailed Kite

The white-tailed kite (*Elanus caeruleus*) is fully protected under the California Fish and Game Code. Fully protected birds may not be "taken" or possessed (*i.e.*, kept in captivity) at any time (§3511). It is also protected under the Federal Migratory Bird Treaty Act (50 CFR

10.13). The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush (*Baccharis pilularis*). Native trees used are live and deciduous oaks (*Quercus* spp.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (*Acer* spp.), toyon (*Heteromeles arbutifolia*), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semiarid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source (Shuford 1993). Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting from between 50-100 percent of their diet (Shuford 1993).

The closest known record for this species is located 7.1 miles north of the Project site (CNDDDB Occurrence No. 8). This species has been observed flying over the Project site and there is a low potential for this species to nest in the eucalyptus trees or coyote brush on the Project site perimeter, or within the sphere of influence of this project. Therefore impacts to nesting white-tailed kites are regarded as potentially significant pursuant to CEQA. Preconstruction surveys will be conducted prior to site grading or tree/shrub removal to ensure that if this species nests on or near the Project site, that it will not be affected by the proposed Project. Mitigation measures will be implemented if this species is found to be nesting on or immediately adjacent to the Project site (see Impact and Mitigation Section).

Northern Harrier

The northern harrier (*Circus cyaneus*) is a California species of special concern. This raptor is also protected under California Fish and Game Code §3503.5 that protects nesting raptors and their eggs/young. The northern harrier is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13). Northern harriers build grass-lined nests on the ground in dense, low-lying vegetation in a variety of habitats, although they are typically found nesting in grassland or marsh habitats. This species is particularly vulnerable to ground predators such as coyotes (*Canis latrans*), red fox (*Vulpes vulpes*), and various snake species. Ground nesting birds in general are also subject to disturbance by agricultural or vegetation control practices.

The closest known record for this species is located 7.9 miles southeast of the Project site (CNDDDB Occurrence No. 16). This species was observed flying over the Project site. Owing to routine mowing and disking of the Project site, there is a very low potential that this species nests in the grassland habitats on or adjacent to the Project site. Regardless, preconstruction surveys would have to be conducted prior to grading the Project site to ensure that direct take of this species would not occur. Accordingly, impacts to nesting northern harriers are regarded as potentially significant pursuant to CEQA. If northern harriers are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impact and Mitigation Section).

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is a California species of special concern. Its nest, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, and §3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act (50 CFR 10.13). Finally, based upon this species' rarity status, any unmitigated impacts to rare species would be considered a "significant effect on the environment" pursuant to §21068 of the CEQA Statutes and §15382 of the CEQA Guidelines. Thus, this owl species must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency. When these owls occur on a Project site, typically, mitigation requirements are mandated in the conditions of project approval by the CEQA lead agency.

Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often, the burrowing owl utilizes rodent burrows, typically ground squirrel burrows, for nesting and cover. They may also on occasion dig their own burrows, or use man-made objects such as concrete culverts or rip-rap piles for cover. They exhibit high site fidelity, reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observing these owls during the spring and summer months or, alternatively, the presence of its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow entrance. Burrowing owls typically are not found in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the entrances of their burrows, grazed grasslands seem to be their preferred habitat because it allows them to view the world at 360 degrees without obstructions.

The closest known record for western burrowing owl is located 0.9 mile north of the Project site at St. Vincent School in unincorporated Marin County along the northern boundary of the City of San Rafael (CNDDDB Occurrence No. 45). There is a low potential for this species to nest in the ruderal grasslands on the Project site due to the frequent mowing of these open fields on the site to control the vegetation. In addition, M&A did not identify any suitable burrows within the project area during our surveys. Finally, WRA biologists and M&A biologists have never observed this owl on or adjacent to the Project site.

While western burrowing owls are not currently known to occur on the site, this is a mobile species that could move onto the Project site in the future. Accordingly, impacts to nesting western burrowing owls are regarded as potentially significant pursuant to CEQA. In order to avoid potential impacts to burrowing owls, a survey should be conducted the year that development of the Project site commences. The survey should follow the survey methodology prescribed in CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). If burrowing owls are identified nesting on or immediately adjacent to the Project site, mitigation measures will be implemented (see Impacts and Mitigation Section for further details).

Short-Eared Owl

Short-eared owl (*Asio flammeus*) is a California species of special concern. It is protected under the Migratory Bird Treaty Act (50 CFR §10.13). The short-eared owl settles where it finds high California meadow vole populations, gathering sometimes by the hundreds and staying to nest only as long as the food abundance lasts (Shuford 1993). In California, these owls breed in alfalfa fields, grassland, fresh, brackish, and salt marshes. Nests consist of a slight depression on the ground or, more rarely, in a burrow. Nests may be entirely exposed to the light but more often are shielded by clumps of grasses, weeds, or low-growing marsh vegetation. Peak breeding months include April through May. Prey includes meadow voles, gophers, and other small rodents, supplemented by birds, beetles, and other insects, frogs and occasionally small snakes and fish.

The closest known record for short-eared owl is located 7.9 mile southeast of the Project site (CNDDDB Occurrence No. 10). It is not known to occur on the Project site. The short-eared owl is a mobile species that is susceptible to disturbance from man (i.e., does not acclimate well to living/nesting in close proximity to man). While there is a very low likelihood this species would nest onsite due to the frequent mowing and other disturbance in the ruderal grasslands of the Project site, since this is a mobile species, impacts to nesting short-eared owls are regarded as potentially significant pursuant to CEQA. Preconstruction surveys should therefore be conducted prior to grading the Project site to ensure that direct take of this species would not occur. Mitigation measures will be implemented if this species is found to be nesting on the Project site (see Impact and Mitigation Section).

Saltmarsh Common Yellowthroat

The saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) is a California species of special concern. This warbler is found in freshwater marshes, coastal swales, riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields and grasslands that border these wet habitats. In the San Francisco Bay region, about 60 percent of the population breeds in brackish marsh, 20 percent breeds in riparian woodland, 10 percent in freshwater marsh, 5 percent in salt marsh, and 5 percent in upland vegetation (Hobson et al. 1986). Nests are well concealed, mostly on or near the ground in grass tussocks, low herbaceous vegetation, cattails, rushes, and bushes generally to about five feet above the ground, though many are below six inches (Shuford 1993).

The closest known record for this species is located 6.8 miles north of the Project site at the mouth of the Petaluma River (CNDDDB Occurrence No. 87). This species could nest in the marsh vegetation along the North Fork of Gallinas Creek. Since the proposed Project will not result in impacts to potentially-occupied habitat along Gallinas Creek, and the uplands adjacent to this creek will be protected, implementation of the proposed Project is not expected to result in impacts to this species. Regardless, preconstruction surveys will be conducted prior to site grading or bridge construction work to ensure that if this species nests

near the Project site, that is will not be affected by the proposed Project (see Impact and Mitigation Section).

San Pablo Song Sparrow

The San Pablo song sparrow (*Melospiza melodia samuelis*) is a California species of special concern. This subspecies of song sparrow is restricted to wetland habitats near San Pablo Bay where it nests in emergent wetland vegetation (e.g., cattails, bulrushes) or dense riparian thickets. An overstory of trees may be present, but is not required (Zeiner et al. 1990a).

There is a record for this species in the vicinity of Miller Creek and Gallinas Creek adjacent to the Project site (CNDDDB Occurrence No. 36). It is likely that this species occurs along the North Fork of Gallinas Creek just north of the project area. It would not likely nest on the Project site that is routinely mowed, or even on the levee along the North Fork of Gallinas Creek since this levee is also routinely mowed by airport maintenance staff. Since the proposed Project will not result in impacts to potentially-occupied habitat along Gallinas Creek, and the uplands adjacent to this creek will be protected, implementation of the proposed Project is not expected to result in impacts to this species. Regardless, preconstruction surveys will be conducted prior to site grading or bridge construction work to ensure that if this species nests near the Project site, that is will not be affected by the proposed Project (see Impact and Mitigation Section).

Suisun Shrew

Suisun shrew (*Sorex ornatus sinuosus*) is a California species of special concern. This small insectivorous mammal only occurs in the tidal marshes of the northern shores of San Pablo Bay and Suisun Bay. This species requires dense low-lying vegetation, driftwood and other litter for cover above the high tide line to provide nesting habitat. This shrew feeds primarily on amphipods, isopods, and other marsh invertebrates (Goals Project 2000).

There is a record for the Suisun shrew vole located 7.9 miles north of the Project site in the pickleweed marsh on the west side of Tubbs Island, south of Tolay Creek and north of San Pablo Bay (CNDDDB Occurrence No. 12). It is unlikely that Suisun shrews reside in the relatively narrow band of marsh vegetation that occurs along both sides of the North Fork of Gallinas Creek. Since the proposed Project will not result in impacts to marsh habitats along the North Fork of Gallinas Creek, and the uplands adjacent to this creek will be protected, implementation of the proposed Project is not expected to result in impacts to this species (see Impact and Mitigation Section).

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) is a California species of special concern. It has no federal status. This bat occurs in humid coastal regions of northern

and central California. This species is known to roost in limestone caves, lava tubes, mines, and buildings. This bat species is extremely sensitive to disturbance.

There is a record of a possible nursery roost site for this species located 9.7 miles north of the Project site (CNDDDB Occurrence No. 121). At that location Townsend's big-eared bats were found roosting in various historic structures. There are no suitable roosts or maternity sites on the Project site. Consequently, implementation of the proposed Project is not expected to result in impacts to this species.

Pallid Bat

Pallid bat (*Antrozous pallidus*) is a California species of special concern. It has no federal status. This bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern Counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County. It occurs in a wide variety of habitats. It is most common in open, dry habitats with rocky areas for roosting. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Roosts must protect bats from high temperatures. Night roosts may be in more open sites such as porches and open buildings. A social bat, it roosts in groups of 20 or more.

The closest known record for this species is located 2.4 miles south of the Project site in San Rafael (CNDDDB Occurrence No. 205). There are no suitable roosts or maternity sites on the Project site. Consequently, implementation of the proposed Project is not expected to result in impacts to this species.

Salt Marsh Harvest Mouse

The salt marsh harvest mouse (*Reithrodontomys raviventris*) was federally listed as an endangered species throughout its entire range on October 13, 1970 (Federal Register 35: 16047). Critical habitat has not been designated for this species. This mouse was also state listed as endangered in 1971. The salt marsh harvest mouse is a small, native rodent that is endemic to the tidal and diked marshes of San Francisco Bay, San Pablo Bay, and Suisun Bay of northern California. There are two subspecies of the salt marsh harvest mouse: the northern subspecies (*Reithrodontomys raviventris halicoetes*) and the southern subspecies (*Reithrodontomys raviventris raviventris*). The northern subspecies lives in the marshes of the San Pablo and Suisun bays, the southern subspecies lives in the marshes of Corte Madera, Richmond, and South San Francisco Bay (Goals Project 2000).

The habitat most commonly associated with this species of mouse is the mid-to-upper tidal salt marsh. Salt marsh harvest mice are critically dependent on dense vegetative cover and their preferred habitat is dominated by pickleweed (*Salicornia virginica*) (USFWS 1984). Studies have shown that salt marsh harvest mice are most commonly found in pickleweed communities with the following characteristics: one hundred percent cover, at a minimum 50

percent pickleweed cover; a cover depth of 30 to 50 centimeters at summer maximum; with habitat complexity in the form of fat hen (*Atriplex triangularis*) and alkali heath (*Frankenia salina*) or other halophytes (salt-tolerant plants) (USFWS 1984). In marshes with an upper zone of peripheral halophytes or adjoining grasslands, mice use this vegetation to escape the higher tides.

Diet appears to consist mainly of salt marsh plant stems and leaves, with a low proportion of seeds and insects; in winter a high proportion of grasses are consumed. The northern subspecies of the salt marsh harvest mouse can drink sea water for extended periods but prefers freshwater. The southern subspecies cannot subsist on sea water but it actually prefers moderately salty water over freshwater. Although salt marsh harvest mice are mostly active at night, they are sometimes active during daylight hours. Breeding occurs from spring through autumn. Each female usually has one or two litters per year. Nests are quite minimal, often built of grass, sometimes may be in shrubs or taller vegetation.

There is a record for salt marsh harvest mice located 0.8 mile east of the Project site in the marsh along the San Pablo Bay (CNDDDB Occurrence No. 30). This known record occurs where Gallinas Creek empties into the bay. It is conceivable that salt marsh harvest mice may occasionally venture up the North Fork of Gallinas Creek corridor. Salt marsh harvest mice may occur in the narrow band of marsh vegetation that occurs along the North Fork of Gallinas Creek; however, the proposed Project will not result in impacts to potentially-occupied habitat along Gallinas Creek. Since the marsh habitats and the uplands adjacent to this creek corridor will be protected, implementation of the proposed Project is not expected to result in impacts to this species (see Impact and Mitigation Section).

San Pablo Vole

San Pablo vole (*Microtus californicus sanpabloensis*) is a California species of special concern. It has no federal status. This vole is a subspecies of the common California meadow vole that occurs throughout California. This subspecies is only found in the salt marshes of San Pablo Creek and on the south shore of San Pablo Bay. This vole constructs burrows in soft soil and forms a network of runaways leading to and from the burrows. It feeds on grasses, sedges, and herbs.

There is a record for the San Pablo vole located 7.9 miles southeast of the Project site in the “Chevron Marsh” at the mouth of Wildcat Creek (CNDDDB Occurrence No. 4). San Pablo voles may reside in the narrow band of marsh vegetation that occurs along the North Fork of Gallinas Creek; however, the proposed Project will not result in impacts to potentially-occupied habitat along Gallinas Creek. Since the marsh habitats and the adjacent uplands will be protected, implementation of the proposed Project is not expected to result in impacts to this species (see Impact and Mitigation Section).

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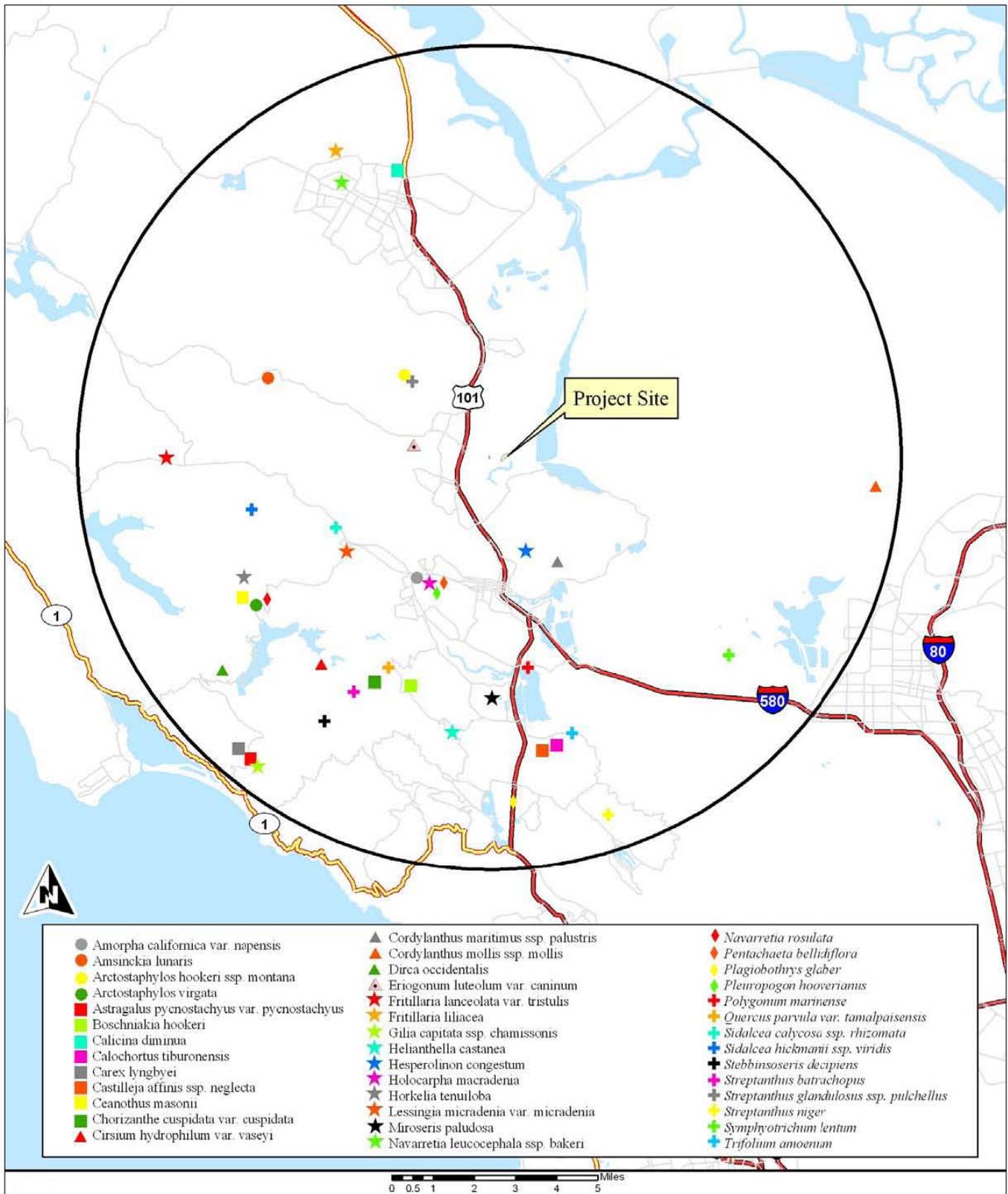


Figure 7-2
Closest Known Records for Special-Status
Plant Species Within 10 Miles of Project Site



Source: Monk & Associates



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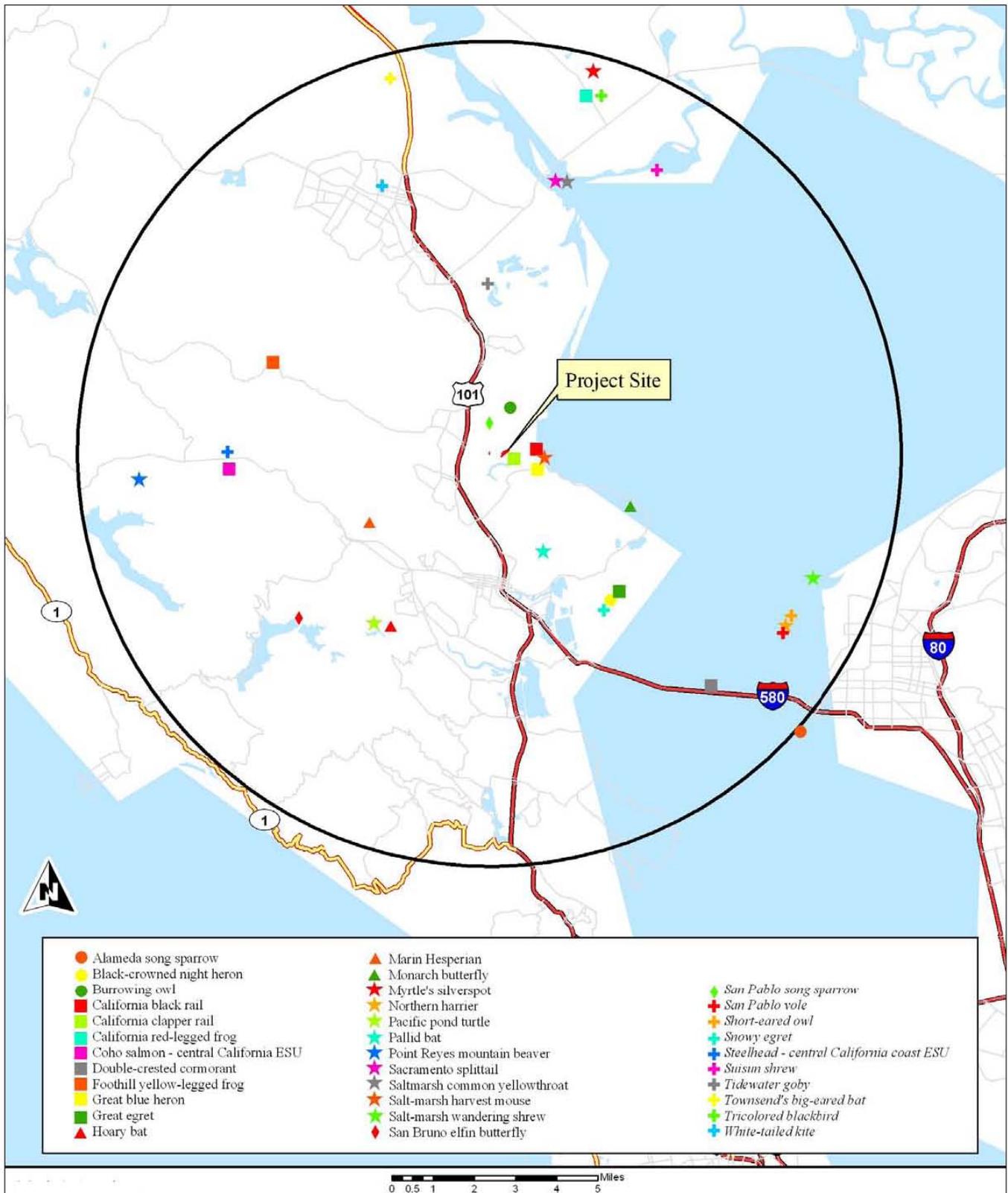


Figure 7-3
Closest Known Records for Special-Status
Wildlife Species Within 10 Miles of Project Site



Source: Monk & Associates



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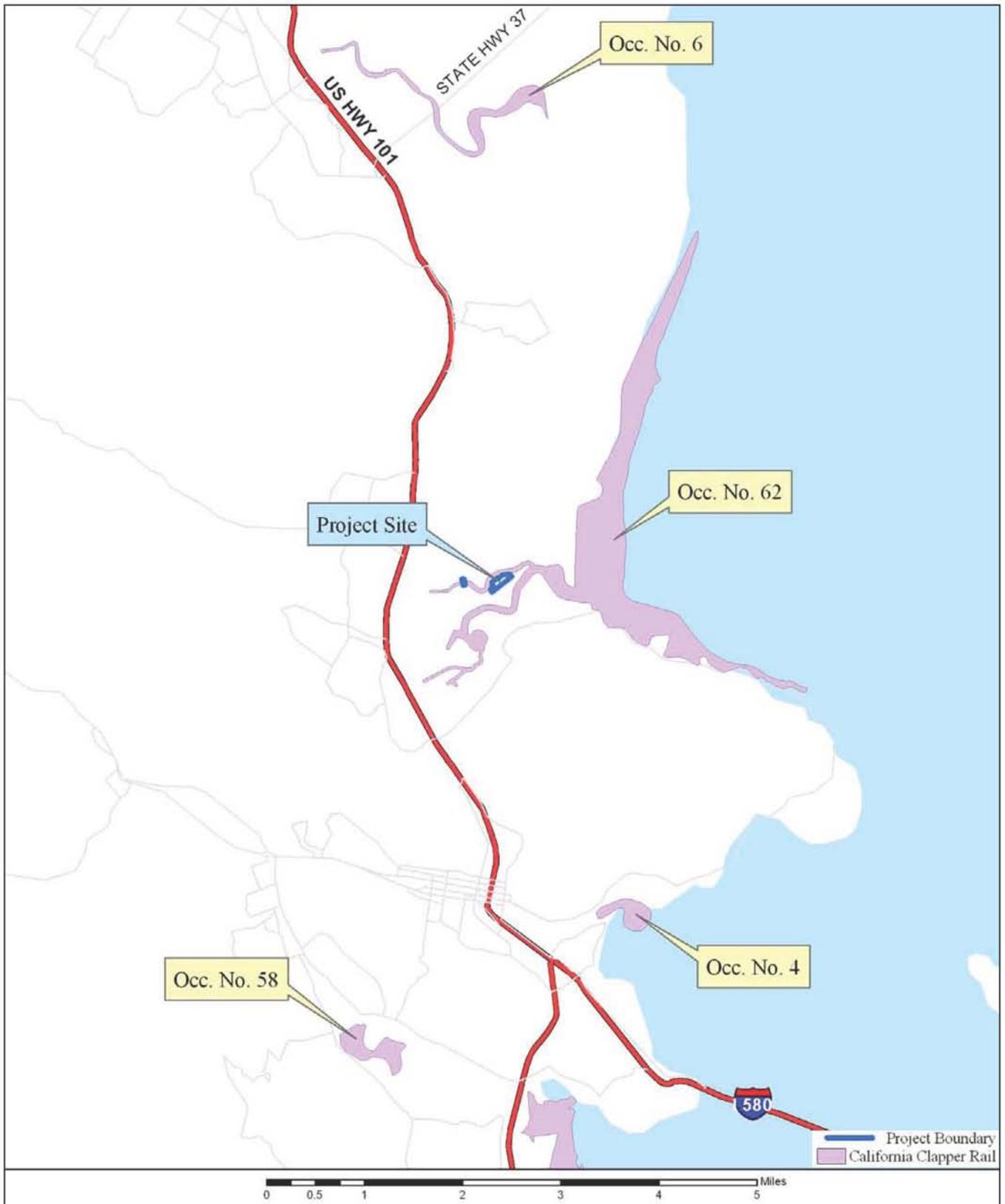


Figure 7-4
California Clapper Rail Records Known
to Occur in Vicinity of Project Site



Source: Monk & Associates



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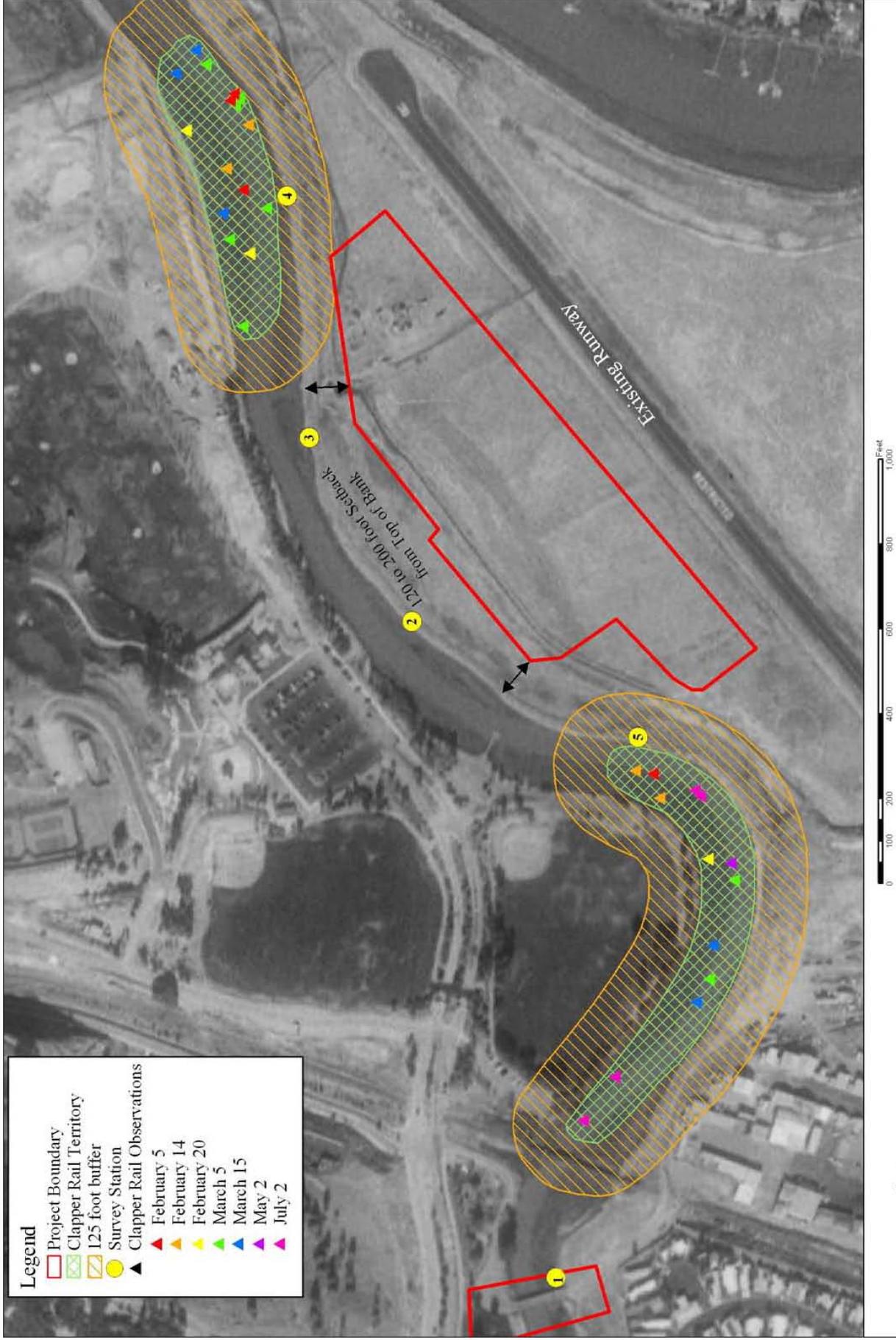


Figure 7-5
California Clapper Rail Locations Identified During
Protocol Surveys along the North Fork of Gallinas Creek



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IMPACTS ANALYSIS

The following thresholds for measuring a Project's environmental impacts are based upon CEQA Guidelines and BAAQMD thresholds.

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other Federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels. "Significant" impacts as they pertain to these four categories are discussed under the appropriate heading below.

A "potentially significant" designation is used under circumstances where the presence of a special-status species or resource is uncertain and project construction could result in its loss. This designation is also used if it is unclear if the proposed Project would result in a significant adverse impact, but the likelihood is great. "Less than significant" impacts are those impacts not put into either significant or potentially significant categories. Impacts would be generally considered less than significant if the habitats and species affected were common and widespread in the region and in the State.

STANDARDS OF SIGNIFICANCE

Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool,

coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Waters of the United States and State

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes “other waters” (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a Project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a Project site would also be considered a significant adverse impact.

Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFG typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

PROJECT IMPACTS AND MITIGATION MEASURES

Anadromous Fish Species

Impact Bio-1 **Listed Anadromous Fish Species.** Project construction or operations would not result in any direct impacts to federally listed fish species; however, activities during bridge construction could result in indirect impacts to federally listed anadromous fish species that may occur in the North Fork of Gallinas Creek. This is a *potentially significant* impact.

Coho salmon is a federally threatened species and a state endangered species, and steelhead is a federally threatened species. While neither fish species is known from the North Fork of Gallinas Creek north of the Project site boundary, both species have a low potential to occur in the North Fork of Gallinas Creek. The proposed Project will not result in any direct impacts to the North Fork of Gallinas Creek because all construction work would occur outside the creek channel. Consequently, there will be no direct impacts to potentially-occupied fisheries habitat in Gallinas Creek.

As part of the proposed Project, a new deck will be placed over the existing bridge support structures. The proposed bridge improvements will include pile-driving new piers into paved areas above the top of the creek bank in order to support the new bridge structure; however the bridge work would not result in direct impacts to North Fork of Gallinas Creek. The noise impacts from the pile-driving could result in indirect impacts to federally listed anadromous fish species that may occur in the North Fork of Gallinas Creek. Impacts to these fish species and/or their habitat would be considered a potentially significant impact pursuant to CEQA. This impact could be mitigated to a level considered less than significant.

Work activities associated with the bridge improvements could result in impacts to water quality in the North Fork of Gallinas Creek. This could affect habitat occupied by state and federally listed fish species. In addition, the proposed Project will discharge storm water runoff generated from the Project site into the North Fork of Gallinas Creek via the existing pump station located on the banks of the creek. Adverse impacts to water quality in the North Fork of Gallinas Creek resulting from the proposed Project would be a potentially significant impact to special status fish species pursuant to CEQA. However, the Hydrology and Water Quality analysis in Chapter 10 of this EIR includes recommended mitigation measure **MM Hyd-1**, which requires the preparation of an Erosion Control Plan (ECP) and Stormwater Pollution Prevention Plan (SWPPP), pursuant to the City of San Rafael's NPDES General Construction Activities Storm Water Permit Requirements established by the Clean Water Act. Preparation of these plans will ensure that construction-related impacts to water quality associated with increased erosion, sedimentation, or pollutant content remain at levels considered less than significant. **MM Hyd-1d** further requires the Applicant to prepare a post-construction Storm Water Management Plan (SWMP) and to incorporate into the final site plan features that would clean site waters in accordance with RWQCB and MCSTOPPP

standards before they enter San Rafael Bay. **MM Bio-1b**, recommended below, provides additional measures with respect to the required management and pollution prevention plans that pertain to aquatic species. Therefore, the Project would not impose any significant water quality impacts on the creek that would result in significant indirect impacts to habitat occupied by state or federally listed fish species.

An increase in shadows on the creek as a result of the Project would also be considered “fill,” and consequently, pollution, by the RWQCB. However, the proposed new bridge will be the exact width and length of the existing bridge deck (see **Figure 3-16** for bridge details) so there would be no increase in shadows on the creek as a result of the bridge replacement; and, therefore, no increase in fill material within the creek as a result of this Project.

Although the mitigation measures from Chapter 10 discussed above will ensure that water quality is not significantly impacted by the proposed Project, the following additional recommended mitigation measures are recommended to ensure that listed anadromous fish species are also not adversely impacted by the Project.

Recommended Mitigation Measures

MM Bio-1a **Listed Anadromous Fish Species – Pile Driving.** Bridge construction shall proceed according to the following:

- All work associated with the new bridge, including the demolition of existing bridge deck, installation of the new deck, and other bridge improvements, shall be restricted to August 1 to October 15;
- Pile-driving work shall be further restricted to between the dates of September 1 and October 15, when migrating anadromous fish would not be expected to be in Gallinas Creek. This “avoidance window” was selected to avoid the breeding season of several other special-status species as well, as detailed below.
- As required by CDFG in the Streambed Alteration Agreement (SBAA), work activities associated with the pile-driving shall not begin unless there is no rain in the forecast, and all erosion control measures are in place pursuant to a detailed Storm Water Pollution Prevention Plan (SWPPP) prepared for the project.
- Any conditions of the SBAA imposed by the CDFG shall also become conditions of the Project approval.
- Precautions shall be taken to prevent silt-laden or contaminated runoff from entering the stream.

- Sandbags shall be installed at the top of bank to prevent fluids, sediment, or construction related debris from entering Gallinas Creek.
- A hammock, or similar material, shall be deployed over the creek during reconstruction of the bridge to capture any construction debris that could fall into the creek during the proposed bridge work.
- All construction debris shall be removed from the work area following completion of the bridge improvements.

MM Bio-1b **Listed Anadromous Fish Species – SWPPP & SWMP.** The SWPPP and SWMP required under **MM Hyd-1** in Chapter 10 of this EIR shall ensure the following specifications are met:

- The SWPPP and SWMP will be designed to ensure that there are no significant impacts to water quality in the North Fork of Gallinas Creek resulting from Project construction or post-construction storm water discharges.
- Prior to being discharged, storm water generated on the Project site, including the parking lots, shall be treated via a comprehensive set of onsite treatments BMPs to remove urban contaminants from the runoff.
- Since the proposed Project will increase the amount of impervious surface on the Project site, the SWMP shall also address storm water detention and shall ensure that the volume of water discharged into the North Fork of Gallinas Creek does not exceed pre-project volumes. Treated storm water will continue to be discharged at constant rates up to the existing pump station capacity of 500 gallons per hour/18.5 cubic feet per second.

Resulting level of significance

Implementation of **MM Bio-1a** and **MM Bio-1b** above will reduce potential impacts to anadromous fish and their habitat to a level considered *less than significant* pursuant to CEQA.

California Clapper and Black Rail

Impact Bio-2 **California Clapper Rail and California Black Rail.** The proposed Project will not impact marsh habitats or adjacent upland habitats along the North Fork of Gallinas Creek; therefore, there will be no direct impacts to the California clapper rail or the California black rail. However,

indirect impacts to California clapper rails, and possibly to California black rails, could result from noise generated during Project construction and as part of Project operation. Unless mitigated, these impacts would be *potentially significant*.

As discussed above, California clapper rail is a federally and state listed endangered species, and the California black rail is a State-listed endangered species. M&A conducted USFWS-approved protocol clapper rail surveys along the North Fork of Gallinas Creek in 2007. M&A determined that two pairs of clapper rails nested along the North Fork of Gallinas Creek on the opposite bank approximately 310 feet from the proposed Project during the 2007 survey (see **Figure 7-4**). The nest sites were situated in areas where there is a significantly wider band of tidal marsh vegetation. It is important to note that the side of the channel used by the California clapper rails for most of their activities, including nesting, is the same side of the channel where there is an existing park, a heavily used pedestrian trail, and a golf course. Accordingly, M&A believes that these clapper rails are well acclimated to high levels of human activity. Clapper rails were not observed at any time during M&A's surveys occupying or using anything but the tidally influenced marsh habitats along and within the North Fork of Gallinas Creek. They were never observed on the top of the levee or the outboard side of the levee on the Project site.

While not observed during California clapper rail surveys, the California black rail could use the band of marsh vegetation along the North Fork of Gallinas Creek now or in the future. Thus, potential impacts to this species must also be considered.

The proposed Project will not result in any direct impacts to marsh habitats along the North Fork of Gallinas Creek. The distance between the proposed recreational facility, including the building and the outdoor fields, and the top of the levee along the North Fork of Gallinas Creek will be 100 feet or greater, as shown on the Project site plan (see **Figure 7-4**). Additionally, the existing levee, which is situated between the marsh habitat and the Project development envelope, will provide additional buffering effect. Therefore, an appropriate development setback (buffer area) would be in place. The South Fork of Gallinas Creek located on the south side of the airport will also not be affected by the Project. The airport runway, areas bordering the runway and the levee along the South Fork of Gallinas Creek will remain between the Project site and this creek. Consequently, M&A does not believe that California clapper rail or California black rail (or their habitat) will be directly impacted by the proposed Project.

However, to ensure that there are no direct impacts to California clapper rails or California black rails, the Project should preserve and protect the marsh habitats and the uplands adjacent to the North Fork of Gallinas Creek that provide habitat value for the California clapper rail and California black rail. In doing so, the proposed Project would be consistent with the U.S. Fish and Wildlife Services' Recovery Plan for the salt marsh harvest mouse and California clapper rail that states that "...marshes should have a wide, relatively

undisturbed band of upland vegetation adjacent to the upper zone.” Preserving and protecting the marsh habitats and the uplands adjacent to the North Fork of Gallinas Creek will ensure that the California clapper rail and California black rail habitat will not be directly impacted by the proposed Project.

Indirect impacts to California clapper rails, and possibly to California black rails, could result from noise generated during project construction. As part of the proposed Project, a new deck will be placed over the existing bridge crossing the North Fork of Gallinas Creek, which currently provides access to the airport. The bridge improvements would include pile-driving new piers into paved areas above the top-of-bank in order to support the new bridge structure. The noise impacts from the pile-driving could result in: (1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates). These impacts would be considered significant and adverse unless the proposed mitigation measures are implemented.

The noise analysis in Chapter 12 of this EIR discusses the potential impacts of pile-driving on people and provides **MM N-2**, which requires the implementation of construction equipment engine noise controls, the restriction of construction hours, and the designation of a Noise Disturbance Coordinator to respond to any local complaints on construction noise. Additionally, Chapter 12 provides **MM N-3**, which requires that quiet pile-driving procedures be implemented, such as pre-drilling holes to maximum depth. Implementation of these measures will also assist in reducing noise impacts to special-status species in the vicinity; although, the analysis in this chapter recommends additional mitigation in order to fully reduce potential special-status species impacts to a level considered less than significant.

Indirect impacts to the rails in the North Fork of Gallinas Creek could also result from noise generated from the recreational facility once it is in operation. As discussed in the noise analysis in Chapter 12, potential noise impacts could result from an increase in ambient noise levels generated from the recreational facility, specifically nighttime noise generated from spring and summer sporting events at the recreational facility. However, these impacts are not considered to be significant. Once the recreational facility is operational, clapper rails in the marsh habitats to the north of the site are not expected to be significantly adversely affected. Clapper rails living in this area have already become accustomed to heavy human disturbances, and they nest adjacent to a pedestrian walking path with frequent dog traffic. Moreover, as discussed in the noise analysis in Chapter 12 of this EIR, noise levels around the Project site are already elevated due to the pre-existing airport, nearby freeway, sporting events at the neighboring park, and golfers in the driving range located on the North Fork of Gallinas Creek. Due to the high degree of human activity and disturbance that already exists in the area around the airport, it is expected that most wildlife using the North Fork of Gallinas Creek would readily acclimate to new noises generated by the proposed facility. Furthermore, additional noise generated at the recreational facility would be minimized by the creek setback/buffer discussed above.

Finally, indirect impacts to clapper rail and black rail habitat could result from any adverse water quality impacts of the Project on the North Fork of Gallinas Creek. Such impacts would be considered potentially significant pursuant to CEQA; however, these impacts could be mitigated to a level considered less than significant.

To ensure that Project construction activities do not adversely impact California clapper or black rails, construction of the recreational facility should not commence until July 1st, when the young rails can be expected, in most cases, to have fledged. While not typical, there are cases where rails may lose their first clutch of eggs and can then successfully recycle (*i.e.* lay a second clutch of eggs), thereby delaying completion of the nesting cycle by up to a month. Regardless, commencement of construction of the recreational facility in July would be at a time when the recycle attempt is far enough along to ensure that the adult level of commitment to completing the nesting cycle is firmly established. It is also important to note that the nests will be below the levee elevation in the creek channel zone and thus will be somewhat buffered from noise and certainly from visible disturbance. In addition, the 100-foot creek protection buffer will be maintained between all construction activities of the recreational facility and the top-of-levee along the North Fork of Gallinas Creek, providing additional buffering. This should eliminate all impacts to birds nesting along the North Fork of Gallinas Creek, including rails.

Construction of the recreational facility could extend into October, with interior work allowed throughout the year. Under the required timeframe for construction of the recreational facility, construction activities at the Project site would not be expected to have any deleterious effects on nesting clapper or black rails if the following recommended mitigation measures were implemented.

Recommended Mitigation Measures

MM Bio-2a California Clapper Rail and California Black Rail – Perimeter Fence.
To ensure that the marsh habitat and the upland buffer along the North Fork of Gallinas Creek is protected, a fence shall be installed around the perimeter of the proposed Project area, and human access into this buffer area will be prohibited except as required by maintenance/operation personnel for continued levee maintenance and other required airport operational tasks that are routinely practiced today (see following paragraphs). The exact location and size of the fence shall be determined by a qualified biologist. The fence will be ten-feet tall for the purpose of preventing balls from the soccer fields from entering the marsh. Retrieval of items from the fenced area shall be done by authorized recreation facility personnel only. In addition, signs will be posted stating that public access into the buffer area is strictly prohibited owing to the sensitivity of the marsh habitat and to ensure the continued use of this habitat by special-status wildlife species. Without a fence, there is no realistic

expectation that the marsh habitat along the North Fork of Gallinas Creek and the adjacent upland areas will remain protected.

MM Bio-2b

Permanent Conservation Area. The applicant shall designate the marsh habitats along the North Fork of Gallinas Creek and the 100-foot upland buffer area on the Project site adjacent to the North Fork of Gallinas Creek as a permanent “conservation area” that will be protected through recordation of a declaration of covenants, conditions and restrictions on the property. The deed restriction will create covenants running with the land that impose on the property owner (Applicant) the duty to manage and maintain the “conservation area” in perpetuity to ensure that the resource values of the preserved land remain protected forever. The easement deed will preclude future development or modification of the “conservation area.” The City shall have review and approval authority over the deed restriction language and ability of the owner or subsequent owners to make any modifications to the restrictions. The location and the total acreage of the “conservation area” shall be clearly indicated on a plat map which shall accompany the deed restrictions that shall be recorded for the property before issuance of building permits. Prior to recordation of the deed restriction document, the City shall review and verify that compliance is achieved with the following specifications.

- a) The deed restriction shall clearly indicate that the land shall be maintained as a “conservation area,” without encumbrances of any structures or roads or landscaping. The purpose of this limitation on use of the property is to protect the biological resource values of the North Fork of Gallinas Creek. All future property owners shall be obligated to maintain this restriction. The “conservation area” shall be protected in perpetuity and shall not be canceled, amended or modified without the prior written approval by the City of San Rafael.
- b) The deed restriction shall be recorded as a condition of Project approval. It is intended that the deed restriction will be a perpetual limitation on use running with the land and all present and future landowners.

The Applicant shall be responsible for the costs and expense incurred by the City in causing the Declaration of Covenants, Conditions and Restrictions (i.e., the deed restriction) to be recorded for the “conservation area”, as well as enforcement of the deed restriction and exercise of its rights and remedies under the deed restriction recorded for the “conservation area.”

MM Bio-2c**California Clapper Rail and California Black Rail – Levee**

Maintenance. Maintenance of the levees along Gallinas Creek must be allowed to continue for airport safety purposes. Any scheduled maintenance, other than vegetation control, should occur in August through September when rails are not expected to be nesting. Mowing of vegetation along levees has occurred for many years pursuant to FAA guidelines, and should continue. To ensure that clapper rails in the area have necessary vegetative cover to escape predators during high tide events, no mowing should be allowed on the slopes of the levees that face the creek.

MM Bio-2d**California Clapper Rail and California Black Rail – Avoidance**

Measures. Disturbances to clapper rails and black rails can be minimized during the construction of the proposed recreational facility by implementing the following avoidance measures:

- Construction of the recreational facility shall not commence until July 1st, when the rails can be expected, in most cases, to have fledged young. Construction of the recreational facility could extend into October, with interior work allowed throughout the year.
- To account for California clapper rails or black rails, and other special-status birds, that likely occur and nest in the marsh habitats along the creek in the immediate area of the bridge, all work associated with the new bridge, including the demolition of existing bridge deck, installation of the new deck, and other bridge improvements, shall be restricted to August 1 to October 15. The bridge pile-driving dates shall be further restricted to September 1 and October 15 when potentially occurring anadromous fish would not be expected to occur in the channel. This “avoidance window” is outside of the California clapper rail, California black rail, and other special-status birds breeding seasons, thereby eliminating the potential that bridge reconstruction activities would disrupt breeding attempts.
- Noise abatement measures shall include restricting construction to the daylight hours and limiting the use of high decibel construction equipment (70-90 dBA) to areas at least 200 feet from the North Fork of Gallinas Creek. This restriction does not apply to bridge pile-driving activities, provided these activities occur during the “avoidance window” provided above. Consequently, noise from the Project site construction will not disrupt nocturnal wildlife species’ activity patterns, and daytime high decibel construction noise will be

buffered by the established noise abatement zone along the North Fork of Gallinas Creek.

- Finally, four-foot black mesh exclusion fencing shall be installed along the outside edge of the creek buffer zone (100 feet from the North Fork of Gallinas Creek) to prevent sensitive species, such as clapper rails and black rails, from entering the work areas. The exact location of this fence shall be determined by a qualified biologist. The fence shall be installed prior to the time any site grading or other construction-related activities are implemented. The fence shall remain in place during site grading or other construction-related activities.

MM Bio-2e California Clapper Rail and California Black Rail – Event Curfew. In order to ensure that Project operational noise does not significantly disrupt normal nocturnal wildlife species activity patterns, outdoor evening events, including soccer games and any other outdoor events that attract large numbers of spectators, shall end by 10:00 p.m. When there are evening soccer events, the 10:00 p.m. end time will ensure that noise generated from the recreational facility will not disrupt normal nocturnal wildlife species' activity patterns, allowing nocturnal movements through the project area over the duration of most of the night on the nights of the year affected by events.

Resulting level of significance

Implementation of **MM Bio-2a** through **MM Bio-2e** above will eliminate potential indirect impacts to California clapper rails and California black rails and thus these impacts are regarded as less than significant pursuant to CEQA.

Nocturnal Lighting

Impact Bio-3 Nocturnal Lighting. Lighting of the outdoor soccer field at the proposed recreational facility at night for evening games could result in *potentially significant* impacts to wildlife species and habitat in the North Fork of Gallinas Creek.

Lighting of the proposed outdoor soccer field at night for evening games could result in illumination of habitats along the North Fork of Gallinas Creek. Light intruding into wildlife habitats can mimic extended daylight conditions and the disturbance caused by nocturnal lighting can alter behavior and movement patterns and increase predation risk, thereby diminishing the habitat value of these areas. The potential disruption to nocturnal wildlife species inhabiting or migrating through the North Fork of Gallinas Creek would be a potentially significant impact pursuant to CEQA.

The potential light and glare impacts of the Project on the surrounding community are analyzed in Chapter 4: *Aesthetics*, of this EIR. Chapter 4 notes that the Applicant proposes a state-of-the-art, environmentally friendly lighting system designed by Musco Lighting that uses 50 percent less electricity and produces 50 percent less spill and glare than traditional fixtures. This technology enables shorter poles while still achieving adequate lighting. The average pole height is only 31.5 feet, which is half as tall as the light poles at neighboring facilities (see lighting details in **Appendix B**).

Chapter 4 also notes that the City's Design Review Board (DRB) requested final approval of Project lighting plan, and specifies that the potential impacts of the Project lighting on sensitive biological resources in the North Fork of Gallinas Creek be given significant consideration in their review and approval. The mitigation measure recommended below will provide additional thresholds that the DRB can incorporate into their final review.

Recommended mitigation measure

MM Bio-3a **Nocturnal Lighting.** Lighting of the outdoor soccer field located near the North Fork of Gallinas Creek will be designed to have focused illumination areas that will ensure that there is no direct lighting of off-site areas, such as the North Fork of Gallinas Creek. All lighting fixtures on the perimeter of the Project shall be outfitted with hoods and cut-off lenses so that the light source itself is not visible to the naked eye from neighboring properties, thereby avoiding indirect light “trespassing” into adjacent habitat areas. This shall be verified by the Design Review Board when it reviews the final lighting plans prior to the issuance of building permits, and verified again at the Project site during the inspection occurring 90 days following lighting installation, as required by **MM Aesth-1a**.

MM Bio-3b **Lighting Curfew.** The recreational facility shall set a 10:00 p.m. outdoor event lighting restriction. While safety lighting allowing visitors to safely leave the site may be illuminated as late as 12:30 p.m., all field lighting shall be terminated no later than 10:00 p.m. When there are evening outdoor soccer events, the 10:00 p.m. end time will ensure that light generated from the recreational facility will not disrupt nocturnal wildlife species' activity patterns, allowing nocturnal migration movements through the project area after that time.

Resulting level of significance.

Implementation of measures **MM Bio-3a** and **MM Bio-3b** will reduce potential nocturnal lighting impacts to a level considered *less than significant* pursuant to CEQA. The 100-foot creek setback/buffer will further reduce this potential impact. Therefore, implementing the mitigation measures above, nocturnal lighting impacts to off-site areas, such as the North

Fork of Gallinas Creek, are considered to have been reduced to the greatest extent possible, and are not expected to have a significant impact on wildlife species in the project vicinity.

Nesting Raptors

Impact Bio-4 Nesting Raptors. Construction and operation of the proposed Project could result in disturbance of nesting raptors, possibly resulting in death of adults and/or young raptors. This is a *potentially significant* impact.

White-tailed kite, northern harrier, and red-tailed hawk have been observed foraging over the proposed Project area and may nest in the vicinity of the Project area. Short-eared owl, while not known to nest in the area of the Project site, conceivably could nest on the Project site. The white-tailed kite is fully protected under the California Fish and Game Code (3511). All raptors (that is, birds of prey) are also protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their nest, eggs, and young are protected under California Fish and Game Codes Sections 3503, 3503.5. Any project-related impacts to these species would be considered a significant impact. Potential impacts to these species from the proposed Project include disturbance to nesting birds, and possibly death of adults and/or young. No nesting raptors (birds of prey) have been identified nesting on the proposed Project site; however, no specific surveys for nesting raptors have been conducted. As such, in the absence of survey results, it must be concluded that impacts to nesting raptors from the proposed Project would be potentially significant pursuant to CEQA. This impact could be mitigated to a level considered less than significant.

Regarding impacts to nesting birds after the recreational facility is in operation, it should be noted that any wildlife species that establishes a breeding territory or nest site anywhere near the recreational facility would have been subjected to an elevated level of disturbance from the beginning of its nesting attempt. Owing to the anticipated elevated levels of disturbance at regular intervals over the course of the year at the recreational facility site, any such wildlife would have to be acclimated to disturbances associated with the recreational facility. Therefore, elevated noise levels associated with spring and summer sporting events would not be expected to result in significant impacts to nesting birds in the area.

Recommended Mitigation Measures

MM Bio-4a Nesting Raptors – Bridge Construction. The bridge reconstruction component of the project shall occur between the dates of August 1 and October 15, and the pile-driving activities shall be restricted to September 1 to October 15, as otherwise specified above. This “avoidance window” is outside of the raptor breeding season, thereby eliminating the potential that bridge reconstruction activities would disrupt nesting raptors in the area.

MM Bio-4b Nesting Raptors – Recreation Facility Construction. Construction of the recreational facility shall occur from July 1 through October, when most raptors are expected to have completed their nesting cycles. In cases where a nest fails early in the egg-laying phase, adults may recycle, laying a second set of eggs. In such cases the completion of the nesting season will be delayed until August. While this is rare, it does occur sometimes in nature and thus a mitigation measure is provided below to account for late nesting raptors.

MM Bio-4c Nesting Raptors – Pre-construction Nesting Surveys. Pre-construction nesting surveys shall be conducted as follows:

- A pre-construction nesting survey shall be conducted in June of the year construction of the project will commence. The nesting survey shall be conducted within 30 days prior to commencing of construction work. The raptor nesting surveys shall include examination of all habitats and trees within 500 feet of the entire Project site, including near the bridge, not just eucalyptus trees on the northern boundary of the Project site.
- If a nesting raptor species is identified, a 300-foot radius buffer around any active nest site that is located on or within 300 feet of the Project site shall be fenced with orange construction fencing. If the nest is off the Project site, the Project site shall be fenced where this buffer intersects the project area. This 300-foot buffer may be reduced in size if a qualified raptor biologist determines that the nesting raptors are acclimated to people and disturbance, and otherwise would not be adversely affected by construction activities. At a minimum, however, the non-disturbance buffer shall be a radius of 100 feet around the nest site. When construction buffers are reduced from the 300 foot radius, a qualified raptor biologist shall monitor distress levels of the nesting birds until the young fledge from the nest. If at any time the nesting raptors show levels of distress that could cause nest failure or abandonment, the raptor biologist shall have the right to re-implement the full 300-foot buffer. Instances when the buffer could be reduced in size would be if the raptors were well acclimated to disturbance and/or if there were physical barriers between the nest site and the construction project that would reduce disturbance to the nesting raptors.
- No construction or earth-moving activity shall occur within the non-disturbance buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained

sufficient flight skills to avoid project construction zones. This typically occurs by July 1. Regardless, the resource agencies consider September 1 the end of the nesting period unless otherwise determined by a qualified raptor biologist. Once the raptors have completed the nesting cycle, that is the young have reached independence of the nest, no further regard for the nest site shall be required and no other compensatory mitigation is required.

Resulting level of significance

Implementation of measures **MM Bio-4a** through **MM Bio-4c** will reduce potential impacts to nesting raptors to a level considered *less than significant* pursuant to CEQA.

Western Burrowing Owl

Impact Bio-5 Western Burrowing Owl. Construction and operation of the proposed Project could result in disturbance of the western burrowing owl, possibly resulting in death of adults and/or young owls. This is a *potentially significant* impact.

The western burrowing owl is a California species of special concern. This owl is also protected under California Fish and Game Code §3503, §3503.5, §3513, and §3800, and the Federal Migratory Bird Treaty Act. Finally, based upon this species' rarity status, any unmitigated impacts to rare species would be considered a "significant effect on the environment" pursuant to §21068 of the CEQA Statutes and §15382 of the CEQA Guidelines. Thus, this owl species must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency. When these owls occur on a Project site, typically, mitigation requirements are mandated in the conditions of project approval by the CEQA lead agency.

As reported by both WRA and M&A, there is a low potential for this owl species to nest in the ruderal grasslands on the Project site or in the ruderal habitats immediately adjacent to the Project site due to the frequent mowing of these open fields on the site to control vegetation. Moreover, M&A did not identify any suitable burrows within the project area, and WRA biologists or M&A biologists have never observed this owl on or adjacent to the Project site. However, although this species is not currently known to occur on the site, the western burrowing owl is a mobile species that could move onto the Project site in the future, which presents the possibility that Project construction activities could disturb or harm nesting burrowing owls. Construction activities that disturb the nesting activities of burrowing owls would be a *potentially significant* impact pursuant to CEQA. This impact could be mitigated to a level considered less than significant by conducting pre-construction nesting surveys for western burrowing owls, as recommended below.

Recommended Mitigation Measures

- MM Bio-5a** **Western Burrowing Owl – Nesting Surveys.** Pre-construction nesting surveys for Western burrowing owl shall be conducted as follows:
- Surveys shall be conducted for western burrowing owls in April, May, and June the year construction of the project will commence. The Project site and a 150 meter (approximately 500 ft.) buffer (where possible based on habitat) shall be surveyed to assess the presence of burrowing owls and their habitat. The survey shall be conducted in accordance with the survey requirements detailed in the California Department of Fish and Game’s *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). Ideally, surveys shall be conducted in both breeding season (April 15-July 15) and non-breeding season (December-January) to assess use of the Project site by this species.
 - If burrowing owls are found on the Project site during the non-breeding season (September 1 through January 31), impacts to burrowing owls shall be avoided by establishing a fenced 160-foot buffer (50 meters) between the nest site (i.e., the active burrow) and any earth-moving activity or other construction-related disturbance on the Project site.
 - If burrowing owls are detected on the site during the breeding season and appear to be engaged in nesting behavior, a fenced 250-foot buffer (75 meters) shall be installed between the nest site (i.e. the active burrows or ground nests) and any earth-moving activity or other disturbance on the Project site. This 250-foot buffer may be removed once it is determined by a qualified raptor biologist that that young have fledged (that is, left the nest). Typically, the young fledge by August 31st. This fence removal date may be earlier than August 31st, or later, and would have to be determined by a qualified raptor biologist.
- MM Bio-5b** **Western Burrowing Owl – Pre-construction Survey.** A preconstruction survey of the Project site shall be conducted within 30 days prior to ground disturbing activities. If more than 30 days lapse between the time of the preconstruction survey and the start of ground-disturbing activities, another preconstruction survey must be completed. This process should be repeated until the Project site habitat is converted to non-habitat (e.g., developed for recreational uses).
- MM Bio-5c** **Western Burrowing Owl – Passive Relocation.** If occupied western burrowing owl burrows are found within 160 feet of the proposed Project

work area during the non-breeding season, and may be impacted, passive relocation measures shall be implemented according to the Burrowing Owl Consortium Guidelines (BOC 1993) and as otherwise approved by CDFG. Rather than capturing and transporting burrowing owls to a new location (which may be stressful and prone to failure), passive relocation is a method where the owls are enticed to move on their own accord. Proof that CDFG has approved any passive relocation measures shall be provided to the City of San Rafael prior to commencement of such activities. Passive relocation shall not commence before September 30th and shall be completed prior to February 1st of any given year. After passive relocation, the Project site and vicinity will be monitored by a qualified biologist daily for one week and once per week for an additional two weeks to document where the relocated owls move. A report detailing the results of the monitoring will be submitted to CDFG within two months of the relocation.

MM Bio-5d

Western Burrowing Owl – Habitat Delineation. If burrowing owls are found occupying burrows on the Project site, a qualified raptor biologist shall delineate the extent of burrowing owl habitat on the site. To mitigate for impacts to burrowing owls, the applicant shall implement mitigation measures required by the CDFG which state that six and a half acres (6.5 acres) of replacement habitat must be set-aside (i.e., protected in perpetuity) for every occupied burrow, pair of burrowing owls, or unpaired resident bird. Protecting burrowing owl habitat in perpetuity will off-set permanent impacts to burrowing owl and their habitat. For example, if two pairs of burrowing owls are found occupying burrows on the Project site, 13 acres of mitigation land must be acquired. Similarly, if one pair and one resident bird are identified, 13 acres of mitigation land must be acquired. The protected lands shall be adjacent to occupied burrowing owl habitat and at a location acceptable to CDFG. Land identified to off-set impacts to burrowing owls must be protected in perpetuity either by a conservation easement or via fee title acquisition. CDFG will likely require that a detailed mitigation and monitoring plan be developed for the burrowing owl mitigation area. This plan shall be prepared by the project biologist and will be subject to CDFG approval. The applicant will provide an endowment fund to the Grantee of the Conservation Easement for the long-term management of the burrowing owl mitigation lands.

Resulting level of significance

Implementation of measures **MM Bio-5a** through **MM Bio-5d** will reduce potential impacts to western burrowing owls to a level considered less than significant pursuant to CEQA. Significance after Mitigation: Less than significant.

Common and Special-Status Nesting Birds

Impact Bio-6 **Impacts to Common and Special-Status Nesting Birds.** Construction and operation of the proposed Project could adversely impact common and special-status nesting passerine birds, their eggs, and/or young. Common and special-status nesting passerine birds are protected under the California Fish and Game Code (Sections 3503, 3503.5), and the Migratory Bird Treaty Act. This is considered a *potentially significant* impact pursuant to CEQA.

Common nesting passerine birds (that is, perching birds) and special-status birds, such as San Pablo song sparrow and saltmarsh common yellowthroat, could be affected by the proposed Project. Birds and their nests are protected under California Fish and Game Code (Sections 3503, 3503.5), and the Migratory Bird Treaty Act. Impacts to nesting birds, their eggs, and/or young resulting from the proposed Project would be potentially significant pursuant to CEQA. These impacts shall be mitigated to levels considered less than significant.

Impacts to unoccupied nesting habitats for these species would not be considered significant as there are other local and regional nesting habitats available for use by these species that could be used in subsequent nesting seasons. Consequently, no mitigation is warranted for impacts to unoccupied nesting habitats.

Recommended Mitigation Measures

MM Bio-6a **Common and Special-Status Nesting Birds – Bridge Construction.** The bridge reconstruction component of the project shall occur between the dates of August 1 and October 15, and the pile-driving activities will be restricted to September 1 to October 15, as otherwise specified above. This “avoidance window” is outside of the breeding season, thereby eliminating the potential that bridge reconstruction activities would disrupt nesting birds.

MM Bio-6b **Special-Status Nesting Birds – Nesting Surveys.** A nesting survey shall be conducted within 15 days prior to commencing construction work. If special-status birds, such as saltmarsh common yellowthroat and San Pablo song sparrow, are identified nesting near the bridge reconstruction component of the Project, a 200-foot radius buffer must be established around the nest site by installing bright orange construction fencing. Similarly, if great blue herons, great egrets, snowy egrets, or black-crowned night herons are found nesting near the bridge or near the Project

site area, a 200-foot radius around the nest site(s) must be fenced with bright orange construction fencing. If nests are found off the Project site but within 200 feet, the portion of the 200-foot buffer on the Project site shall be fenced with bright orange construction fencing. No construction or earth-moving activity shall occur within a 200-foot buffer until it is determined by a qualified biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1. This date may be earlier than August 1, or later, and would have to be determined by a qualified ornithologist.

MM Bio-6c Common Nesting Birds – Nesting Surveys. If common (that is, not special-status) passerine birds (that is, perching birds such as western scrub jays and northern mockingbird) are identified nesting within the project area or immediately adjacent to the Project site, a 75-foot buffer demarcated by orange lath staking installed every 20 feet around the buffer shall be established. No grading/construction activities shall occur in the established buffer until it is determined by a qualified biologist that the young have fledged and have attained sufficient flight skills to leave the area. Typically, most passerine birds can be expected to complete nesting by July 1, with young attaining sufficient flight skills by early July.

Resulting level of significance

Implementation of measures **MM Bio-6a** through **MM Bio-6c** will reduce potential impacts to common and special-status nesting birds to a level considered *less than significant* pursuant to CEQA.

Salt Marsh Harvest Mouse, Suisun Shrew and San Pablo Vole

Impact Bio-7 Salt Marsh Harvest Mouse, Suisun Shrew and San Pablo Vole. Indirect impacts to Suisun shrew, the salt marsh harvest mouse and the San Pablo vole could result from implementation of the proposed Project. This is a *potentially significant* impact.

The salt marsh harvest mouse is a state and federally listed endangered species. The Suisun shrew and San Pablo vole are California species of special concern. It is conceivable that these native rodents reside in and along the relatively narrow band of marsh vegetation that occurs along both sides of the North Fork of Gallinas Creek. However, these areas are separated from the Project site by the existing nine-foot airport perimeter levee, the top of which (i.e. top of creek bank) would be between approximately 150 and 200 feet from the edge of the Project's proposed building. **MM Bio-2b**, provided above, requires the establishment of a conservation area via an easement granted to the City of San Rafael along

the marsh habitats and the uplands on the Project site adjacent to the North Fork of Gallinas Creek consistent with the U.S. Fish and Wildlife Services' Recovery Plan for the salt marsh harvest mouse and California clapper rail that states that "...marshes should have a wide, relatively undisturbed band of upland vegetation adjacent to the upper zone." Preserving and protecting the marsh habitats and the uplands adjacent to the North Fork of Gallinas Creek will ensure that the salt marsh harvest mouse, Suisun shrew and San Pablo vole habitat will not be directly impacted by the proposed Project.

Regardless, additional mitigation measures are prescribed below to ensure that indirect impacts to these special-status rodents that could result from the nearby Project construction and operation of the recreation facility remains less than significant pursuant to the CEQA. In the absence of the mitigation measures, impacts to these species would be regarded as potentially significant.

The proposed Project will not result in any direct impacts to potentially occupied marsh habitats along the North Fork of Gallinas Creek. The distance between the proposed recreational facility, including the building and the outdoor fields, and the top of the levee along the North Fork of Gallinas Creek will be greater than 100 feet, as shown on the Project site plan and **MM Bio-2b** above requires the establishment of a protected open space easement along the marsh habitats and the uplands on the Project site adjacent to the North Fork of Gallinas Creek; therefore, an appropriate development setback (buffer area) and Biological Protection Area will be provided that will protect special-status rodent species that could be living along the North Fork of Gallinas Creek.

Recommended Mitigation Measures

MM Bio-7 **Salt Marsh Harvest Mouse, Suisun Shrew and San Pablo Vole – Perimeter Fence.** To ensure that the buffer along the North Fork of Gallinas Creek is protected, a fence will be installed around the perimeter of the proposed recreational facility to prohibit human access to this area except as otherwise allowed for maintenance activities associated with the airport. A four-foot black mesh exclusion fencing shall be installed along the outside edge of the creek buffer zone (100 feet from the North Fork of Gallinas Creek) to prevent the Suisun shrew, the salt marsh harvest mouse and the San Pablo vole from entering the work areas. The exact placement of the fence shall be determined by a qualified biologist. In addition, signs will be posted stating that public access into the marsh and adjacent uplands is strictly prohibited to ensure the continued use of the protected area by sensitive wildlife species.

Resulting level of significance

Implementation of the buffer fencing plan required in **MM Bio-7** will preserve and protect the marsh habitats and the uplands adjacent to the North Fork of Gallinas Creek. Since the

proposed Project will not result in impacts to marsh habitats along Gallinas Creek, and the adjacent uplands will be protected, implementation of the proposed Project is not expected to impact any special-status rodent species or other wildlife species that frequent the North Fork of Gallinas Creek. Implementation of the above required mitigation measures will reduce potential impacts to special-status rodents and other wildlife species to a level considered *less than significant* pursuant to CEQA.

Pallid Bat

Impact Bio-8 Pallid Bat (and Other Bat Species). Construction and operation of the proposed Project could result in adverse impacts to the Pallid bat (California species of special concern) and other bat species. This is a *potentially significant* impact.

Pallid bat is a California species of special concern. While this species is unlikely to roost on the proposed Project site, conceivably trees on the Project site could be used for roosting by bats in general (although is extremely unlikely), and thus impacts to bats, including pallid bat, would be a *potentially significant* impact pursuant to CEQA. This impact could be mitigated to a level considered less than significant.

Recommended Mitigation Measures

MM Bio-8 Pallid Bat (and Other Bat Species). In order to avoid impacts to roosting bat habitat, preconstruction surveys shall be conducted prior to any tree removal on the Project site to ensure that direct take of this species would not occur. A biologist with experience conducting bat surveys shall conduct this survey. If no bats are found during the survey, tree removal shall be conducted within one month of the survey. If a maternity colony is found during the surveys, no eviction/exclusion shall be allowed during the breeding season (typically between April 15 and July 30). If a non-reproductive group of bats are found, they shall be passively evicted by a qualified biologist and excluded from the roost site prior to work activities during the suitable time frame for bat eviction/elusion (*i.e.*, February 20 to April 14 and July 30 to October 15). CDFG shall approve any and all bat eviction activities prior to implementation of such activities. Any conditions for the project imposed by CDFG as a condition for removal of bats would become a condition of project approval.

Resulting level of significance

Implementation of measure **MM Bio-8** will reduce potential impacts to pallid bat and other bat species to a level considered *less than significant* pursuant to CEQA.

CDFG Jurisdiction – Banks of the North Fork of Gallinas Creek

Impact Bio-9 Impacts to CDFG Jurisdiction – Banks of the North Fork of Gallinas Creek. Construction activities at the top of the bank of the North Fork of Gallinas Creek associated with the proposed improvements to the bridge crossing may result in *potentially significant* impacts to CDFG jurisdictional areas.

As part of the proposed Project, a new deck will be placed over the existing bridge support structures. Specifically, the bridge improvements would include removing the existing bridge rail, pile-driving new piers into paved areas above the top of the creek bank in order to support the new bridge structure, lowering a pre-fabricated 25-foot wide bridge on top of the existing bridge, and pumping 8 inches of cement into the bridge deck to form the driving surface. A crane will be used to lower the pre-fabricated bridge into place. Without prior proper authorization, these activities at the top of bank of the North Fork of Gallinas Creek would be regarded as a significant impact to CDFG jurisdictional areas, which would be considered a significant impact pursuant to CEQA.

The applicant received a 1602 Lake and Streambed Alteration Agreement (SBAA) from CDFG on June 9, 2006 (Notification Number: 1600-2006-0266-3) for the proposed bridge work. The SBAA details the authorized activities, and provides specific terms and conditions for this project. These terms include that work on the bridge project shall be restricted to July 15th through October 15th during periods of low stream flow and dry weather. The SBAA states that no work shall occur below the top-of-bank or the normal high-water mark of the stream. All conditions in the authorized SBAA shall also be made a condition of Project approval. Potential impacts to water quality are addressed above. The SBAA expires on December 31, 2008.

In order to ensure that the all terms and conditions of the SBAA are met, the following mitigation measure is recommended:

Recommended Mitigation Measures

MM Bio-9 **Impacts to CDFG Jurisdiction – Banks of the North Fork of Gallinas Creek.** Construction of the proposed bridge shall be restricted to the terms and activities consistent with the approved CDFG 1602 Lake and Streambed Alteration Agreement (Notification Number: 1600-2006-0266-3), including but not limited to the following:

- work on the bridge project shall be restricted to July 15th through October 15th during periods of low stream flow and dry weather
- no work shall occur below the top-of-bank or the normal high-water mark of the stream
- all conditions in the authorized SBAA shall also be made a condition of the project

Resulting level of significance

Implementation of the terms and conditions of the SBA, as required by **MM Bio-9**, will reduce impacts to CDFG jurisdictional areas to a level considered *less than significant* pursuant to SBAA and therefore, CEQA.

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CULTURAL RESOURCES

INTRODUCTION

The cultural resources analysis in this chapter is based upon the cultural resources evaluation of the Project site prepared by Archaeological Resource Service in February 2005. This study included: a) a database search to determine the presence or absence of previously recorded cultural resources within or adjacent to the Project site; b) a check of appropriate historic references to determine the potential for historical era archaeological deposits or features, and c) a surface reconnaissance of the Project site to identify any visible signs of potentially significant cultural artifacts that would be adversely impacted by the Project.

As discussed in the Project Description, the San Rafael Airport is comprised of a single property identified as “Parcel B.” Parcel B is identified with several assessor tax parcels, which are not parcels for subdivision or development purposes. Due to the age of this analysis, an Archaeological Status Report was prepared for each assessor’s tax parcel on the Project site. An Archaeological Status Report is an initial evaluation to determine the need for archaeological consultation prior to initiating a development project.

The Cultural Resources Evaluation and Archaeological Status Reports for the Project site can be found in **Appendix F** of this EIR.

SETTING

PREHISTORIC BACKGROUND

The Project site lies within the ethnographic region of the Coast Miwok speakers of the broader language, Miwok or Miwokan. Coast Miwok are represented in this area by the Federated Indians of the Graton Rancheria. Miwok is a linguistic subfamily of the Utian family of the Penutian stock. Other members of the Penutian stock include the Maidu, Winton, Costanoan, and Yokut (Kelly 1978). The Coast Miwok occupied an area that included modern day Marin County and southern Sonoma County, north to around Duncans Point, and northeast to Glen Ellen (Barrett 1908; Kelly 1978).

The Coast Miwok can be divided into two groups with their own distinct dialects; the Western-Bodega Miwok (Olarnentko), and the Southern Marin or Hookoeko tribe, who

spoke the Southern Marin dialect with some linguistic differences between valley and coastal peoples (Kelly 1978: 414). Merriam (1907) discusses a third group from the northern area of Southern Marin Valley known as the Lekahtewutko tribe. Bennyhoff (1977) and Slaymaker (1982) have further divided the Coast Miwok into political tribelets.

Due to the diverse supply of resources throughout this region, the Coast Miwok were well suited to an economy based on hunting, fishing and the gathering of acorns (Kelly 1978: 415). They exploited the wetland and marsh areas in particular, and wetland plants and shellfish from the ocean and bays were a prime source of food. They used dip nets and spears to catch salmon and steelhead, as well as bow and arrows with obsidian points to kill small and large game. Along with acorns, which were ground down to make mush or bread, the Coast Miwok utilized the buckeye fruit, the pepperwood fruit, and a variety of greens. The collecting of shellfish led to the formation of shell deposits known as midden heaps, mounds, or scatters, which are now the primary remains of most prehistoric sites around the bay (Kelly 1978: 417-418).

The Coast Miwok lived in conical structures that were small and made from two forked and interlocking poles, onto which additional poles were lashed to form a cone shaped frame, then covered by grass (Kelly 1978: 417). Approximately 6 to 10 people would reside in one of these structures. Larger villages often contained a large, circular sweathouse that was dug four feet into the ground and covered with a frame of poles topped with grass, and a large ceremonial house that was built in the same manner as the sweathouse.

Tools were made from locally obtained materials including chert, obsidian, basalt, bone, antler, and various types of plants. Beads and pendants were manufactured from locally obtained shell and include clamshell disc beads (used as money), Olivella beads and abalone shell pendants. Clothing was minimal, but based on seasonal weather. Women wore a double apron made of deerskin and men wore a similar type of loincloth. Baskets were important to the Coast Miwok and were used for portage, storage, and cooking containers, as well as for seed beating, winnowing, and as hoppers for groundstone mortars. The Coast Miwok also traded for venison, medicinal plants, yellow paint, and turtles (Kelly 1978:419).

The Coast Miwok culture became severely disrupted after the establishment of surrounding missions in San Francisco (1776), San Rafael (1817), and Sonoma (1823) (Kelly 1978). The rapid and forceful desocialization and acculturation imposed upon the Coast Miwok by the missionaries left very little of their culture intact. European diseases eventually decimated the population, and due to the use of Coast Miwok lands for lumbering, dairying, and agriculture, the Coast Miwok people almost disappeared completely. By 1920, only five Coast Miwok descendants remained. Ethnographic data on the Coast Miwok is based primarily the accounts of two Miwok informants, Tom Smith and Maria Capa Frias, who were interviewed between 1931 and 1932 by Isabel Kelly.

The typical indications of Coast Miwok habitation consists of a shell midden deposit which is represented by a dark, ashy, or loamy soil with shellfish, fish, and animal remains throughout the deposit. Because stone tools and debitage (manufacturing waste) tend to preserve well, these materials are also often associated with Coast Miwok habitation sites. Thus, prehistoric shell midden sites often contain chipped stone tools, debitage, and ground stone tools such as mortars, pestles, manos, metates, and hammerstones. Fire cracked rock, charcoal, and ash from cooking fires can also be associated with Coast Miwok shell midden sites. More permanent habitation sites may also contain house depressions, usually identifiable by a hard packed earthen floor containing stone and other cultural materials (Kelly 1978, Slaymaker 1977).

There is also the potential for isolated artifacts such as chipped stone or ground stone tools to be present from the result of basic subsistence activities such as gathering and processing fruits and vegetables, and hunting game. These subsistence activities did not necessarily take place at the more permanent village sites, but would occur in an area where desired materials could be obtained, such as the grasslands between creeks and marshes.

HISTORIC BACKGROUND

The current Project area lies immediately adjacent to the Mexican era Land grant of Rancho San Pedro Santa Margarita y Las Gallinas, which was granted to Timothy Murphy in 1858 (Mexican land grants did not include marshland, only the slightly higher elevations along the marshes and bay). Part of this land grant was purchased by William F. McAlester later in the same year. A 193 acre parcel along Las Gallinas Creek was eventually deeded to McAlester's son-in-law Mabry McMahan by 1900. An 1871 Marin salt marsh and tidal lands map (Allardt 1871 in Beard 1990) indicates that the current Project area was part of the marsh system along San Pablo Bay, and was regularly inundated by tidal action. By 1915, McMahan began filling in a portion of the marsh, constructing concrete retaining walls and levees along the South Fork of Gallinas Creek, constructing a canal around Santa Venetia Island, and started to implement plans for the creation of the community of Santa Venetia, located due south of the Project area on the south side of Gallinas Creek. However, the depression years ended McMahan's plans for his community (Beard 1990).

A 1915 15' Quadrangle map of the San Francisco Bay shows that the current Project area was still part of the marsh system along San Pablo Bay. During the 1930's, the Army Corps of Engineers constructed levees along both the North and South Forks of Gallinas Creek, isolating the current Project area from tidal action. Fill material was added to the flat, marshy areas around San Pablo Bay that were protected by levees, which may have included the current Project area.

PREVIOUS STUDIES IN THE AREA

Archival research indicates that portions of the Project area have been previously surveyed by an archaeologist, and that no cultural materials have been identified within the property. Additionally, numerous archaeological surveys have been performed within the general area of the Project location by researchers from private archaeological firms including Archaeological Resource Service (ARS). These studies included several evaluations of similar land parcels northeast of Santa Venetia, particularly within the lower elevations around Gallinas Creek, adjacent to the marshy area where Gallinas Creek flows into San Pablo Bay.

References for the studies described below can be found in the ARS cultural resources evaluation located in **Appendix F** of this EIR. The reports they describe are unpublished and on file at the Northwest Information Center (NWIC) of the California Historic Resources Information System in Rohnert Park, CA. The NWIC is one of twelve information centers affiliated with the State of California Office of Historic Preservation (OHP) in Sacramento. The purpose of the NWIC is to manage historical resources records, reports, and maps; to supply historical resources information to the private and public sector, to provide educational support and information about historical resources in California to the general public; and to compile and provide a referral list of qualified Historical Resources Consultants. In 1982, a surface reconnaissance of an unknown number of acres for the Las Gallinas Valley Sanitary District Project was performed, focusing on proposed pump station and interceptor improvements. According to the base maps at the NWIC, portions of Chavez's survey included portions of the San Rafael Airport property, but not the part of the property designated for the proposed Project. Chavez did not observe any cultural resources during his survey (Chavez 1982).

In 1990, the Santa Venetia Subdivision area located on the south side of the Gallinas Creek South Fork was surveyed, focusing on the levee system and the concrete bulkhead that surrounds the Santa Venetia Subdivision. No prehistoric resources were discovered during Beard's survey, and she recommended further study of the concrete bulkhead and other historic features within the Santa Venetia Development for the potential of the features to be eligible for listing on the National Register of Historic Places (Beard 1990).

In 1999, a cultural resource record search and literature review of the stations, bridges, and sidings along the Northwestern Pacific Railroad was conducted. The report discussed numerous sites along the railroad line, but none of these sites are located along the RR segment adjacent to the current project area (Newland 1999).

In 1976, a surface reconnaissance of the property due north of the current Project area, as well as large sections of land along the west side of the Northwestern Pacific Railroad was performed for the Las Gallinas Valley Wastewater Reclamation Project. No sites were discovered within the property located on the north side of the North Fork of Gallinas Creek,

but Holman did relocate Ca-Mrn-130 within a segment of his Project area, located just under a mile southeast of the current Project area (Holman 1976).

ARS has performed a number of surveys within close proximity of the current Project area (Greene 2002, Strother and Flynn 2000, Millman 1997, Morre 1997, Chattan 1995). For example, in 2002, the author performed a surface reconnaissance of a small parcel located a half mile south of the current Project area, on the north side of Northwest San Pedro Road. In 2000, ARS performed a surface examination of two parcels on Smith Ranch Road, located within a quarter mile of the current Project area. In 1997, ARS performed a study of a property located a half mile southwest of the current project area, at 280 Channing Way. The results of these surveys did not identify any historic or prehistoric resources within their project areas. A survey performed by ARS in 1997 of a property located a half mile southeast of the current Project area identified a historic site that also contained a prehistoric shell midden. The site, Ca-Mrn-634/H, is discussed further in the next section.

ARCHAEOLOGICAL SITES IN THE VICINITY

As a result of the many studies in the area, multiple prehistoric sites have been identified and recorded within one mile of the Project area. Nine of these sites, designated as Ca-Mmn-120, 121, 122, 123, 124, 125, 126, 127, and 130, were initially recorded by Nels C. Nelson in the early 1900's as shell mound sites (Nelson 1907a-i). As part of his thesis research at the University of California at Berkeley, Nelson recorded as many as 425+ shell mounds and shell heaps around the circumference of the San Francisco Bay. His research began in Sausalito along the Marin County shoreline and paralleled the shoreline of Marin, Sonoma, and Solano Counties, including the low lying areas adjacent to Gallinas Creek and San Pablo Bay confluence (Nelson 1909). Two additional historic sites, CA-Mmn-634/H and Mmn-513H, will also be discussed.

As plotted on the Marin County USGS 7.5 minute base map maintained by the Northwest Information Center and ARS, Ca-Mrn-124 is located approximately a half mile due south of the current Project area. Nelson originally recorded this site as being located on the northwest side of what may have been N. San Pedro Rd. in 1907, and noted that the site had been plowed over. Tom King relocated Ca-Mrn-124 during his 1973 evaluation of 200 acres southeast of the project property for the proposed "San Pedro Reserve" development. He described the site as a relatively late village site, but noted that the majority of the midden had been damaged or obscured by the Jehovah's Witness Church and parking lot (King 1973).

In 1976, an archaeological impact evaluation was performed within the vicinity of Ca-Mrn-124 for the realignment of N. San Pedro Rd. Archaeological Consulting and Research Services, Inc. excavated three test pits within the limits of the proposed road right-of-way for the Marin County Department of Public Works. Although the test pit locations were not indicated on the map, the author indicated that testing was done within close proximity to Ca-

Mnn-124. The results of the testing were negative in terms of prehistoric materials, and only a few samples of modern and historic trash were observed. It was concluded that dark midden-like soil containing shell fragments encountered in the top levels of the test pits was most likely imported fill (ACRS 1976).

Efforts were made in 1995 to relocate Ca-Mrn-124 by ARS, but this proved futile due to modern landscape changes and construction. The area where the site is believed to be located, under the church parking lot, was fenced off and thus inaccessible (Chattan 1995).

Ca-Mrn-123 is located approximately a half mile due south of the current Project area, on the edge of what was formerly marshland. This site was described by Nelson as a shell midden mound approximately 15 feet high, 180 feet wide, and 250 feet long, with signs of human and animal bone (Nelson 1907d). This site has not been relocated by an archaeological study, but it has most likely been destroyed by modern residential development (Chavez 1982).

Ca-Mrn-125, located approximately one mile due south of the Project area, was relocated by King in 1973, and then by Suzanne Baker in 1981. This site has been described as a large shell mound with the dimensions of 40 meters by 50 meters, and 1 meter deep. Chert flakes and fire-cracked rock were observed on the surface of the site (Baker 1981, King 1973).

Ca-Mrn-120, 121, and 122 are located between a half mile and one mile to the east and southeast of the current project property. Ca-Mrn-120 is located in a valley well above the marshland, at about 180 feet above sea level. Nelson initially recorded this site as a shell mound with dimensions of 75 feet by 125 feet, and 8 feet high. A pestle fragment and an obsidian arrow point were found at this site (Nelson 1907a).

Ca-Mrn-121 and 122 are located to the north of 120, on the edge of the marshland just south of Gallinas Beach, about a half mile east of the current Project area. Both sites were shallow shell mounds and described by Nelson as temporary campsites, and little to no evidence of these sites presently exists (Nelson 1907b,c).

CA-Mrn-126 and 127 are located approximately one mile south/southeast of the current Project area, and less than a quarter mile from each other. Mnn-126 was most likely a shell midden site, but it has never been relocated, and little is known about the site.

Mrn-127 was described by Nelson as an oval shaped midden deposit measuring 100 by 270 feet (Nelson 1907h). Sunshine Psota and David Bieling relocated the site in 1989, and recorded three obsidian projectile points and two mortar pestles (Beiling and Psota 1989).

Ca-Mrn-130 is located just under a mile southwest of the current Project area. This site was described as a shell midden by Nelson, and was relocated in 1981 by David Chavez. Chavez noted the presence of fine cracked rock, charcoal, as well as burnt and unburnt animal bone (Nelson 1907i, Chavez 1961).

In terms of historic sites in the vicinity of the Project area, the closest known historic site is CA-Mnn-634/I-I, which also has a prehistoric component. Mrn-6341H was located by Greg Morre of ARS in 1997, and described as a historic retaining wall, a historic house foundation, and a shell midden deposit (Morre 1997).

Ca-Mrn-513H, is located three quarters of a mile south of the current Project area, on the west side of N. San Pablo Rd. The site consists of the remnants of a small farm. Some fruit trees, a small sump, and a twentieth century trash deposit were present at the time the site was recorded (Hilderman-Smith and Bente 1981).

REGULATORY SETTING

FEDERAL REGULATORY FRAMEWORK

National Historic Preservation Act of 1966 (16 U.S.C. 470)

The National Historic Preservation Act (NHPA) is the most comprehensive national policy on historic preservation. The Act, which is designed to encourage the preservation and wise use of our historic resources, establishes the policy of the U.S. Government regarding historic preservation. The act defines historic preservation to include “the protection, rehabilitation, restoration and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or culture.”

Key Provisions

National Register of Historic Places

The Act authorizes the Department of the Interior (DOI) to establish, maintain, and expand a National Register of Historic Places (NRHP). The NRHP, which is maintained by the National Park Service (NPS), is a compilation of cultural resources that have been nominated and accepted as having historic, architectural, archaeological, engineering, or cultural significance, at the national, state, or local level. The majority of “formal determinations” of NRHP eligibility occur when properties are evaluated by a State Historic Preservation Officer (SHPO) in conjunction with federal environmental review procedures. Formal eligibility determinations also occur when properties are nominated to the NRHP, but are not listed due to owner objection. The criteria for determining eligibility have been developed by the NPS. Structures and features must usually be at least 50 years old to be considered for listing on the NRHP, barring exceptional circumstances. A resource is eligible for listing in the NRHP if it meets the any of the following criteria for listing:

- It is associated with events that have made a significant contribution to the broad patterns of our history;
- It is associated with the lives of persons significant in our past;

- It embodies the distinctive characteristics of a type, period, or method, of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or,
- It has yielded, or may be likely to yield, information important in prehistory or history.

According to the NRHP Guidelines, the “essential physical features” of a property must be present for it to convey its significance. Further, in order to qualify for the NRHP, a resource must maintain its integrity, or “the ability of a property to convey its significance.” The seven aspects of integrity are:

- Location (the place where the historic property was constructed or the place where the historic event occurred);
- Design (the combination of elements that create the form, plan, space, structure, and style of a property);
- Setting (the physical environment of a historic property);
- Materials (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 (the physical evidence of the crafts of a particular culture or people during any given period of history or prehistory);
- Feeling (a property’s expression of the aesthetic or historic sense of a particular period of time,) and;
- Association (the direct link between an important historic event or person and a historic property).

Advisory Council on Historic Preservation and Historic Preservation Fund

The Act also established the Advisory Council on Historic Preservation (the Advisory Council), an independent federal agency responsible for advising the President and Congress on historic preservation matters, and reviewing and commenting on federal agency actions that may affect historic properties. Additionally, the Act established the Historic Preservation Fund, a fund to provide federal money for a program of 50/50 matching grants to states and local entities to preserve significant historic properties.

Federal Stewardship

One goal of the act is for federal agencies to act as responsible stewards of our Nation’s resources when their actions may affect historic properties. This goal is carried out primarily

through Sections 106 and 110 of the NHPA. Sections 106 and 110 define the scope and intent of the law and contain the major provisions for federal agencies. These sections form the basis for the implementing regulations that mandate federal historic preservation activities.

Section 106 requires federal agencies to “take into account” the effect of their projects on historical and archaeological resources, even if the Projects would not be located on their land. Thus, before approving the expenditure of federal funds on an undertaking or before issuing a license, agencies must consider the effect of the undertaking or license on any district, site, building, structure, or object that is included in, or eligible for inclusion in, the National Register. Section 106 also requires agencies to provide the Advisory Council a reasonable opportunity to comment on potential effects so that impacts can be avoided or mitigated.

Section 110 requires federal agencies to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation. Under Section 110 federal agencies are responsible for identifying, preserving, and nominating to DOI all sites, buildings, districts, and objects under their jurisdiction or control that appear to qualify for listing on the National Register. It also requires DOI to develop criteria and procedures for federal agencies to use in these reviews and nominations. Thus, each federal agency, in cooperation with the State Historic Preservation Officer (SHPO - State officials who administer the national historic preservation program at the State level) in the state involved, must “establish a program to locate, inventory, and nominate to the Secretary (DOI) all properties under the agency’s ownership or control by the agency, that appear to qualify for inclusion on the National Register in accordance with the regulations promulgated under Section 101 (a)(2)(A).

Implementation Mechanisms

Implementation of this Act is mainly through 36 Code of Federal Regulations (CFR) part 63, Determinations of Eligibility for Inclusion in the National Register of Historic Places, and 36 CFR part 800, Protection of Historic and Cultural Properties.

Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601)

Native American Graves Protection and Repatriation Act (NAGPRA), enacted on November 16, 1990 and the regulations (43 CFR Part 10) that allow for its implementation, establishes a means for American Indians, including members of Indian Tribes, Native Hawaiian organizations, and Native Alaskan villages and corporations to request the return or “repatriation” of human remains and other cultural items presently held by Federal agencies or Federally assisted museums or institutions. NAGPRA also sets forth provisions regarding the intentional excavation and removal, inadvertent discovery, and illegal trafficking of Native American human remains and cultural items. All Federal agencies that manage land

and/or are responsible for archaeological collections from their lands or generated by their activities must comply with the NAGPRA.

The statute requires Federal agencies to produce inventories and written summaries of cultural items in their collections or controlled by them even though the items are held in non-Federal repositories, inform lineal descendants, Indian Tribes and Native Hawaiian organizations that may be affiliated with these items in their holdings, and work with Native American groups identified during the summary and inventory processes; and consult with Tribes or Native Hawaiian organizations when planned archaeological excavations may encounter cultural items or when cultural items are discovered inadvertently on Federal or Tribal lands. Human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony must be expeditiously returned to the lineal descendants or affiliated Indian Tribe or Native Hawaiian organization if requested, upon presentation of a valid claim.

Other Federal Curation Regulations

Federal curation regulations are also provided in 36 CFR Part 79, which apply to collections that are excavated or removed under the authority of the Antiquities Act (16 U.S.C. 431-433), the Reservoir Salvage Act (16 U.S.C. 469-469c), section 110 of the National Historic Preservation Act (U.S.C. 470aa-mm). Such collections generally include those that are the result of a prehistoric or historic resources survey, excavation, or other study conducted in connection with a federal action, assistance, license, or permit.

STATE REGULATORY FRAMEWORK

California Register of Historical Resources (California P.R.C. Section 5024.1)

The California Register of Historical Resources is an authoritative guide to California's significant historical and archeological resources to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state, and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change. The California Register program encourages public recognition and protection of resources of architectural, historical, archeological and cultural significance, identifies historical resources for state and local planning purposes, and determines eligibility for state historic preservation grant funding.

The California Register includes resources formally determined eligible for, or listed in, the National Register of Historic Places through federal preservation programs administered by the Office of Historic Preservation; State Historical Landmarks numbered 770 or higher; points of Historical Interest recommended for listing by the State Historical Resources Commission (SHRC); and, resources nominated for listing and determined eligible in accordance with criteria and procedures adopted by the SHRC.

A resource is eligible for listing in the California Register of Historical Resources if it meets any of the following criteria for listing:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
- It is associated with the lives of persons important to local, California, or national history;
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or,
- It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register if, under criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

Historic Districts are a concentration of historic buildings, structures, objects, or sites within precise boundaries that share a common historical, cultural or architectural background. Individual resources within an historic district may lack individual significance but be considered a contributor to the significance of the historic district.

Native American Historic Cultural Sites (California P.R.C. Section 5097 et. seq.)

This state law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and, establishes the Native American Heritage Commission to resolve disputes regarding the disposition of such remains. In addition, Section 5097.993-5097.994: Native American Historic Resource Protection Act, makes it a misdemeanor punishable by up to a year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the California Register of Historic Resources.

California Native American Graves Protection and Repatriation Act (California Health and Safety Code Section 8010.8011)

The California Native American Graves Protection and Repatriation Act (NAGPRA), enacted in 2001, requires all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete and inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. California NAGPRA also provides a process for the identification and repatriation of these items to the appropriate tribes.

CITY OF SAN RAFAEL REGULATORY FRAMEWORK REGULATIONS AND POLICIES

Historic Preservation Ordinance and Archaeological Resources Ordinance

According to the San Rafael *General Plan 2020* EIR, the City adopted a Cultural Resources Ordinance in 1978. The Ordinance established guidelines regarding remodeling or demolishing structures on a landmark site, structures within a historic district, or historic buildings. In 2002, the City adopted an Archaeological Resources Ordinance to recognize the importance of and to establish procedures for protecting archaeological resources. By separate resolution, the City adopted procedures and regulations for archaeological resource protection, which include the development of a map system that identifies areas that are archaeologically sensitive. The procedures require, where warranted, further study of resources and the imposing of measures to protect resources.

Archaeological Sensitivity Maps

As part of the effort to identify and protect archaeological resources and pursuant to the Archaeological Resources Ordinance, the City has prepared archaeological sensitivity maps, which identify geographic areas of archaeological sensitivity (exclusive of historic resources) within the City of San Rafael based on known and/or recorded sites containing archaeological resources, and sites and/or geographic areas where studies and individual archaeological assessments have been completed. The maps identify three levels of sensitivity: “Low Sensitivity”, “Medium Sensitivity”, and “High Sensitivity” for every parcel within the City. The level of sensitivity of a parcel is based on its proximity (within three hundred feet) to a known and/or recorded archaeological site or an identified archaeological resource, as determined by an archaeologist. Areas of “Medium” and “High” sensitivity require the preparation of an archaeological evaluation prior to issuance of any permit for excavation of grading, while archaeological evaluations are not recommended for areas of “Low” sensitivity.

Zoning Ordinance (Title 14)

14.16.210 Historic preservation. Alteration of a structure on a landmark site or in a historic district may be subject to a certificate of appropriateness and review by the Cultural Affairs

Commission, consistent with the requirements of Chapter 2.18, *Historic Preservation*, of the Municipal Code. (Ord. 1625 § 1 (part), 1992).

General Plan 2020 Policies

In general, the City's policy is to protect and build upon the historic character that exists in the City.

Policy CA-13. Historic Buildings and Areas: Preserve buildings and areas with special and recognized historic, architectural or aesthetic value including, but not limited to those on the San Rafael Historical/Architectural Survey. New development and redevelopment should respect architecturally and historically significant buildings and areas.

Policy CA-15. Protection of Archaeological Resources: Recognize the importance of protecting significant archaeological resources by:

- Identifying, when possible, archaeological resources and potential impacts on such resources.
- Providing information and direction to property owners in order to make them aware of these resources.
- Implementing measures to preserve and protect archaeological resources.

San Rafael Historical/Architectural Survey

In 1977/1978, the City completed the San Rafael Historical/Architectural Survey. The Survey identifies and rates the architectural and historical significance of selected buildings and areas. Approximately 295 structures are identified on the Survey. The results of the Survey place high concentrations of historic buildings in Downtown, Gerstie Park, and the Dominican neighborhoods.

IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The following thresholds for measuring a Project's environmental impacts are passed upon CEQA Guidelines thresholds:

For the purposes of this analysis, an impact on cultural resources is considered significant if the Project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;

- Cause a substantial adverse change in the significance of an archaeological resource, pursuant to § 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature (refer to Section 1.7, Effects Found Not To Be Significant); or,
- Disturb any human remains, including those interred outside of formal cemeteries^{3.12-} February 2006/Edited January 2007.

PROJECT IMPACTS AND MITIGATION MEASURES

Prehistoric, Archaeological and Historic Resources

Impact CR-1 Discovery of Resources. The proposed Project has the potential to disturb unidentified Prehistoric, Archaeological or Historic resources on the Project site. This is considered a *potentially significant* impact.

According to the Cultural Resources Evaluation prepared for this site by Archeological Resource Service (February 8, 2005), there are no historic buildings or other known historic resources on the subject property. Therefore, the Project would not result in impacts on historic resources.

There are no unique geologic features on this flat, previously graded site.

The existing site does not contain any architectural resources that are: a) listed in the local City of San Rafael historical survey; or b) listed, or eligible to be listed, in the California Register of Historical Resources. Therefore, no impact would occur.

The City's "Pastfinder" database gives the Project site a "High Sensitivity" rating, however, so further review and study was required. A cultural resources evaluation was prepared in 2005 by the Archaeological Resource Service that included a NWIC database search, a determination of the potential for presence of historical era features, and a surface reconnaissance of the Project site. This evaluation found that there are no known archeological or paleontological resources on the subject site and that additional field survey is not warranted at this time. However, the site is located in an area near lands known to be previously occupied by Native Americans; it is possible that prehistoric and historic materials may be encountered during grading. Therefore, the following mitigation measure is recommended to reduce potential impacts to archeological resources to less than significant:

Mitigation Measures:

MM CR-1a Monitoring. A qualified archaeological monitor shall be present during pre-construction and construction activities that involve earth disturbance, such as land clearing, excavation for foundations, footings, and utilities. Land clearance and soil excavation shall occur only under the direction of

the project archaeologist, and soil shall not be removed from the site without the approval of the project archaeologist.

MM CR-1b **Discovery.** In the event that archaeological features, such as concentrations of artifacts or culturally modified soil deposits including trash pits older than fifty years of age, are discovered at any time during grading, scraping, or excavation within the property, all work shall be halted in the vicinity of the find, the Planning Division shall be notified, and a qualified archaeologist shall be contacted immediately to make an evaluation. If warranted by the concentration of artifacts or soils deposits, further work in the discovery area shall be monitored by an archaeologist.

Resulting level of significance

Adoption and implementation of **MM CR-1a** and **MM CR-1b** will ensure that any impacts that result from the accidental discovery of cultural resources as a result of Project construction activities remain at a level considered *less than significant*.

Human Remains

There are no formal cemeteries on the site, nor are human remains likely to exist on the property. However, the possibility remains that a resource of cultural significance may be encountered. The City of San Rafael has adopted an Archeological Resources Ordinance that includes a standard condition of approval relating to procedures for the discovery of human remains. With the inclusion of the standard condition of approval, a *less than significant* impact would result.

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GEOLOGY AND SOILS

INTRODUCTION

The analysis in this chapter is based the geotechnical reports prepared for the proposed Project and reviewed by an independent peer reviewer. A geotechnical report was prepared for this Project by John C. Hom & Associates, Inc. (JCH) with peer review by a third party geotechnical engineering firm, Kleinfelder, consistent with the Geotechnical Review Matrix contained in the City of San Rafael's General Plan 2020. Following their review, Kleinfelder responded with a letter (Geotechnical Peer Review New Recreational Facilities at San Rafael Airport, dated September 9, 2005) addressing items that needed further analysis or clarification. JCH responded to the Kleinfelder comments in a letter (Smith Ranch Airport Recreation Building, dated November 23, 2005). In conclusion, Kleinfelder found the geotechnical evaluation for the site and the proposed Project to be sound and consistent with City policies and engineering practices. Copies of the geotechnical reports, peer reviews and comment letters are in **Appendix G** of this document.

SETTING

REGIONAL SEISMICITY

The San Francisco Bay Area is located along the margin between two major tectonic plates, the Pacific and the North American. As such, it is a seismically active region. The United States Geological Survey (USGS) estimates that there is a 67 percent probability that an earthquake of Richter Magnitude ≥ 6.7 will occur on one of the faults in the Bay Area between the years 2001-2030. Of that, there is a 27 percent chance that a large earthquake will occur on the Hayward-Rogers Creek Fault, a 21 percent chance that one will occur on the San Andreas Fault, and an 11 percent chance that one will occur on the Calaveras Fault, although seismologists are unsure whether the Calaveras Fault is capable of producing large earthquakes or fails predominantly by producing moderate earthquakes and by fault creep¹.

¹ Earthquake Probabilities in the San Francisco Bay Region: 2002-2030, Working Group on California Earthquake Probabilities, United States Geological Survey Open-File Report 03-214. Obtained from <http://pubs.usgs.gov/of/2003/of03-214/>

Table 9-1 presents a list of historic Richter Magnitude >6.0 earthquakes, with associated damages, in the vicinity of the Project site². This list is not exhaustive, but is only meant to indicate the likelihood of the site experiencing seismically induced ground shaking in the future.

**Table 9-1:
Historic Earthquakes in Vicinity of Project Site**

Fault Name	Year	Magnitude	Description
San Andreas	1838	6.8 - 7.4 (Approx.)	This Earthquake ruptured a zone approximately 100 miles long from San Francisco to San Juan Bautista. There was little registered damage due to low population levels at the time, but an equivalent earthquake at current population levels could be devastating to the region.
Hayward	1868	7.0	With an Epicenter near Hayward, this earthquake was known as the “Great San Francisco Earthquake” until that title was expropriated in 1906. Strong ground shaking was pervasive throughout the San Francisco Bay area, and a Modified Mercalli Intensity of VIII was estimated in Petaluma. Thirty people were killed and an estimated \$350,000 was lost to damages.
Blind Thrust along Great Valley-Coast Range border region	1892	6.6 and 6.4	Two Earthquakes on April 19 and April 21 struck in the Vacaville-Winters area. The earthquakes reportedly resulted in three deaths and approximately \$225,000 in damage. An MMI value of VI was likely felt in Petaluma.
San Andreas	1906	7.8	Known as the “Great San Francisco Earthquake”, it (along with the fire it started) destroyed much of San Francisco, and an MMI value of VIII was felt in Petaluma. An estimated 3,000 lives and \$524 million in property were lost.
San Andreas	1989	6.9	This earthquake struck in the Santa Cruz Mountains at Loma Prieta. Fifty-seven deaths were reported and \$6 billion in damages were attributed to the Loma Prieta Earthquake

TECTONICS AND FAULTING

Movement along the boundary of the Pacific and North American Tectonic plates is accommodated by the San Andreas Fault system. This system includes not only the San Andreas Fault, responsible for the devastating 1906 San Francisco and 1989 Loma Prieta earthquakes, but numerous secondary faults, many of which have produced large earthquakes in the past and are expected to do so again in the future. Many of these faults are within close proximity to the Project site.³ A map showing the locations of major faults in the site vicinity

² California Historical Earthquake Online Database, California Geological Survey, 2007, obtained from <http://www.consrv.ca.gov/CGS/rghm/quakes/historical/index.htm>

³ California Historical Earthquake Online Database, California Geological Survey, 2007, obtained from

is presented as **Figure 9-1**. Fault location relative to Project site, status, date of most recent motion and Maximum Credible Earthquake (MCE) are presented as **Table 9-2**. According to California Geological Survey criteria, faults showing evidence of rupture during the Holocene (past 11,000 years) are considered active. Faults showing evidence of movement within the last 1,600,000 years are considered conditionally active.

The California Geological Survey considers faults that show evidence of surface rupture within the Holocene (past 11,000 years) as active. The listed faults are considered active, and could generate an earthquake that would shake the ground throughout the region. Strong ground shaking and associated ground failure represent the largest seismic hazards in the City of San Rafael. The intensity of ground shaking at any particular site is a function of many factors including: (1) earthquake magnitude; (2) distance from the epicenter; (3) the duration of strong ground motion; (4) local geologic conditions (soil characteristics and topography); and (5) depth to bedrock.

SEISMICALLY-INDUCED GROUND SHAKING

Due to the proximity of the site to active seismic sources, the probabilistic seismic hazards assessment for the State of California concluded peak ground acceleration for the area to be approximately 40-50 percent of the acceleration due to gravity, with a 10 percent probability of being exceeded during the next 50 years.⁴ This would correspond to a Modified Mercalli Intensity as high as VIII, considered very strong. The implications of this scale are listed in **Table 9-3**.

<http://www.consrv.ca.gov/CGS/rghm/quakes/historical/index.htm>

⁴ California Division of Mines and Geology and United States Geological Survey, 1996, Probabilistic Seismic Hazards Assessment for the State of California (<http://www.consrv.ca.gov/cgs/rghm/psha/index.htm>)

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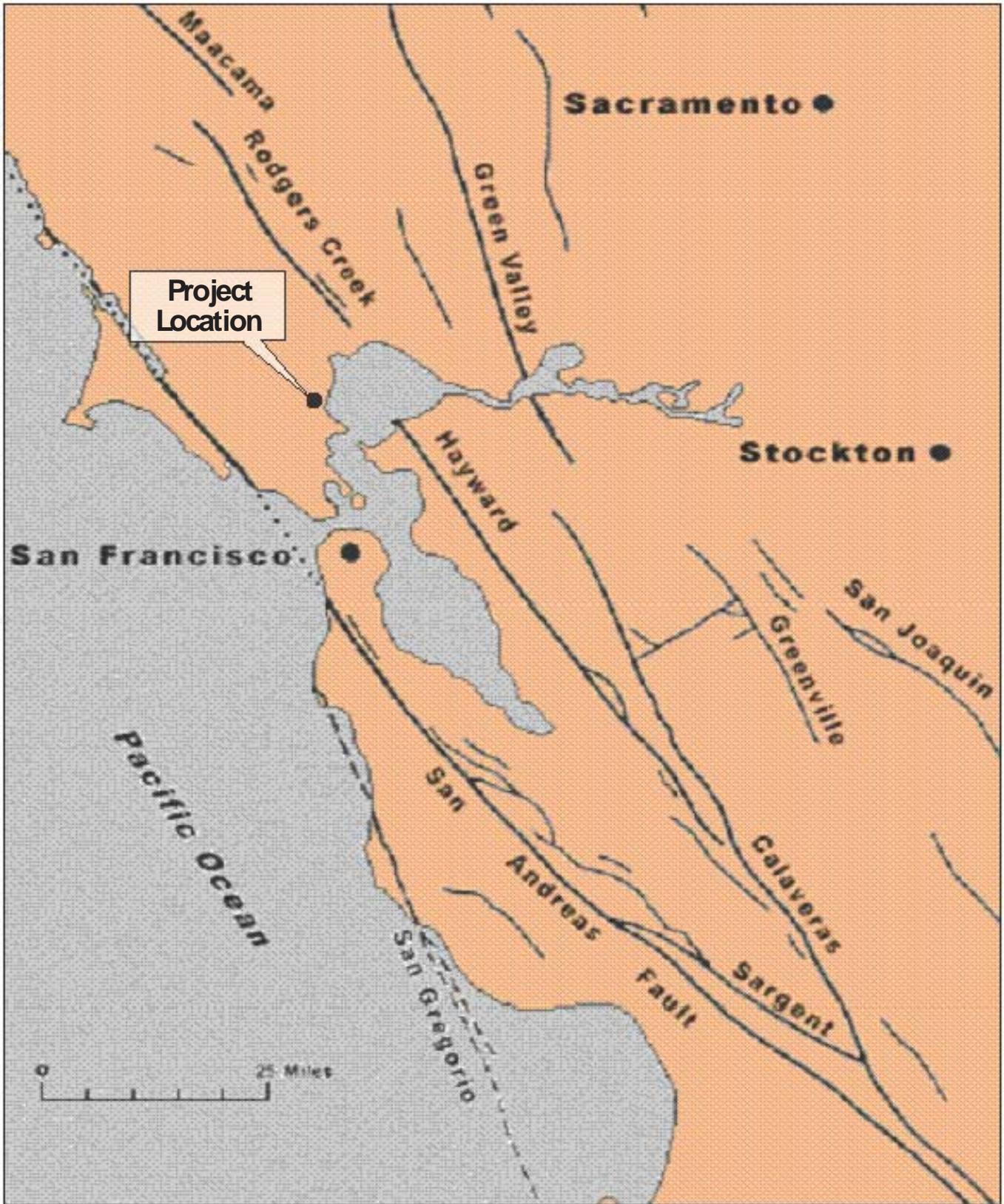


Figure 9-1
Major Faults in Vicinity of Project Site



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**Table 9-2:
Active and Conditionally Active Faults Within 50 Miles of the
Project Site**

Fault Name	Distance from Project mi(km)	Direction	Last Surface Rupture	Status*⁵	Maximum Credible Earthquake⁶
Rogers Creek	5 (8)	NE	Holocene	Active	7
San Andreas	16 (26)	W	Historic	Active	8
Hayward	7 (11)	SE	Historic	Active	7.5
Napa	15 (24)	E	Holocene	Active	--
Green Valley	20 (32)	E	Holocene	Active	6.75
Maacama	25 (40)	N	Holocene	Active	7.25
Concord	25 (40)	SE	Historic	Active	6.5
Clayton	30 (48)	SE	Holocene	Active	--
Vaca	35 (56)	E	Late Quaternary	Conditionally Active	6.75
Hunting Creek	40 (64)	NE	Holocene	Active	6.75

*Faults showing displacement during Holocene time are considered active, faults showing evidence of displacement during Late Quaternary time are considered conditionally active.

⁵ California Division of Mines and Geology, Fault Activity Map of California and Adjacent Areas, 1994, Geologic Data Map number 6.

⁶ Mualchin, Lalliana, Technical Report to Accompany Caltrans California Seismic Hazards Map, July 1996, California Department of Transportation Engineering Service Center, Office of Earthquake Engineering.

**Table 9-3:
Modified Mercalli Earthquake Intensity Scale⁷**

Scale	Intensity	Effects
I		Not felt.
II		Felt by persons at rest, on upper floors, or favorably placed.
III		Felt indoors. Hanging objects swing. Vibration like passing of light trucks.
IV		Hanging objects swing. Vibration like passing of heavy trucks. Standing motorcars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V	Light	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI	Moderate	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Objects fall off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and poorly constructed or weak masonry cracked. Trees, bushes shaken (visibly, or heard to rustle).
VII	Strong	Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to poorly constructed or weak masonry. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, and cornices. Some cracks in average unreinforced masonry. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged
VIII	Very Strong	Steering of motorcars affected. Damage to average masonry and partial collapse. Some damage to reinforced masonry, but not to that specially designed for seismic loading. Fall of stucco and some masonry walls. Collapse of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX	Violent	General panic. Poorly built or weak masonry destroyed; average unreinforced masonry heavily damaged, sometimes with complete collapse; reinforced masonry seriously damaged. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X	Very Violent	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI	Very Violent	Rails bent greatly. Underground pipelines completely out of service.
XII	Very Violent	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

⁷ Wood and Neumann, (1931), Modified Mercalli scale of 1931, *Bulletin of Seismological Society of America*, 21, 277-283.

REGIONAL GEOLOGY

The City of San Rafael is located within the Coast Range Geomorphic Province of California, which contains bedrock geology consisting of complexly folded, faulted, sheared, and altered sedimentary, igneous, and metamorphic rock of the Jurassic-Cretaceous age Franciscan Complex. This material is approximately 65-190 million years old. Regional geologic mapping by the California Geological Survey (CGS) identifies four distinct geologic units in the San Rafael area: bedrock, colluvium, alluvium, and bay mud.

The topography of the region is characterized by northwest—southeast trending mountain ridges and intervening valleys that were formed by extensive faulting activity during the Pliocene Age, approximately 18 to 7 million years ago. Such tectonic activity was responsible for the formation of the uneven depression that is now the San Francisco Bay. More recent activity in the region is concentrated along the San Andreas Fault zone, which consists of a complex group of generally parallel faults. The San Andreas Fault zone runs roughly parallel to the Pacific coastline in western Marin County.

Continual flooding of the lower elevations caused by the rising sea level over the past 15,000 years deposited silt and clay particles in the Bay and formed the highly compressible bay mud. This process is ongoing to the present day.

SITE GEOLOGY AND SOILS

Two test borings were conducted on this site and documented in the Project geotechnical report. The soils encountered on the Project site are a thin layer of fill, Bay Mud, stiff clays and bedrock. The thin layer of fill is not the classic imported fill placed over Bay Mud, but actually the top of the original Bay Mud that has been disced and dried. Though technically fill, there is not a net increase in load onto the Bay Mud that would induce settlement the way classic fill would. The Bay Mud extended to a depth of approximately 28 feet, below which are stiff clays for approximately 40 feet, at which point bedrock was discovered.^{8 9} The locations of the test borings are shown on **Figure 9-2**, and the boring logs are shown on **Figures 9-3** through **9-6**.

⁸ JCH & Associates, *Geotechnical Investigation, Proposed Recreation Building, San Rafael Airport, San Rafael, CA*, May 9, 2005, p. 9.

⁹ JCH & Associates, Letter: Response to Kleinfelder Peer Review, November 23, 2005.

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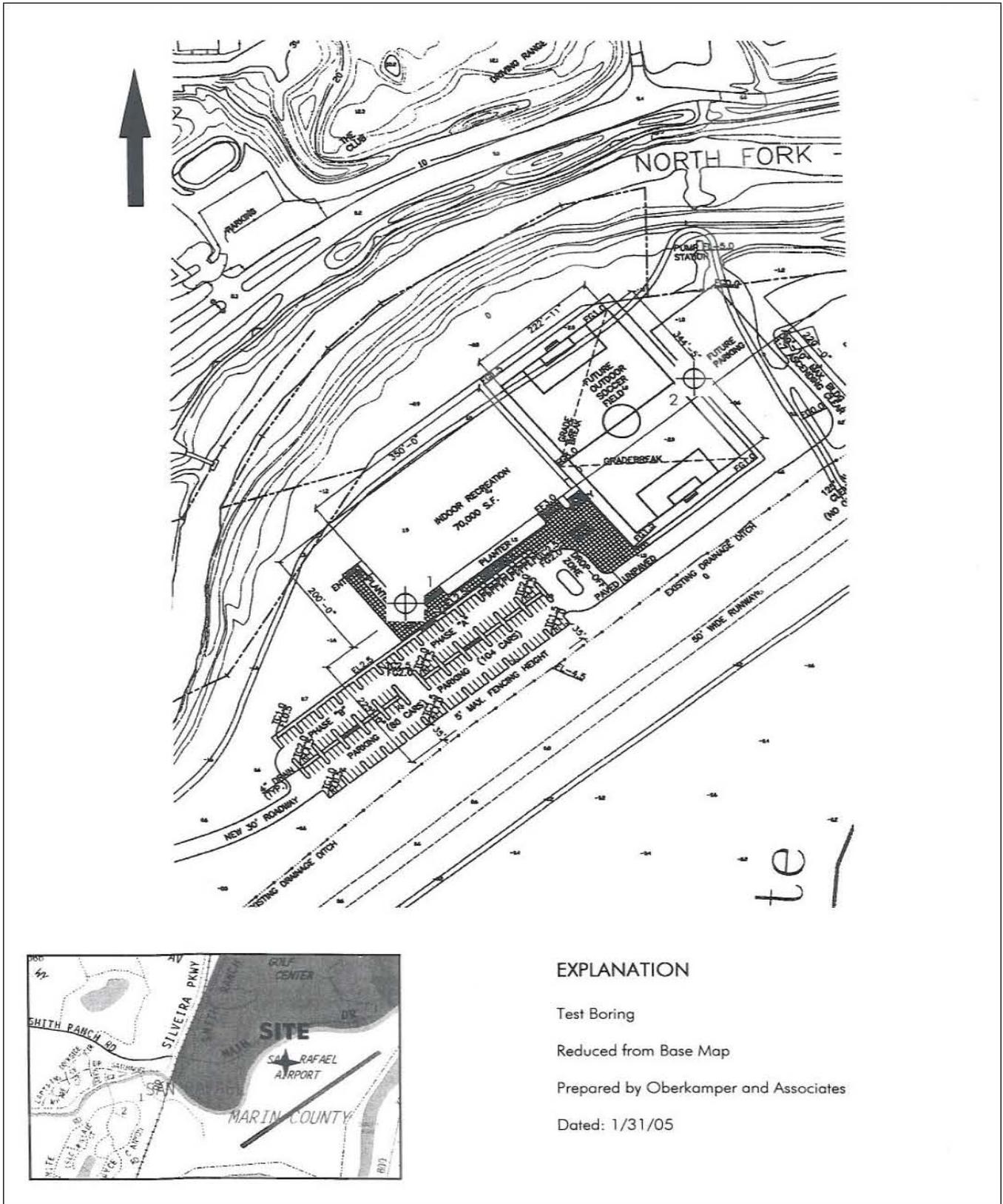


Figure 9-2
Test Boring Location Plan



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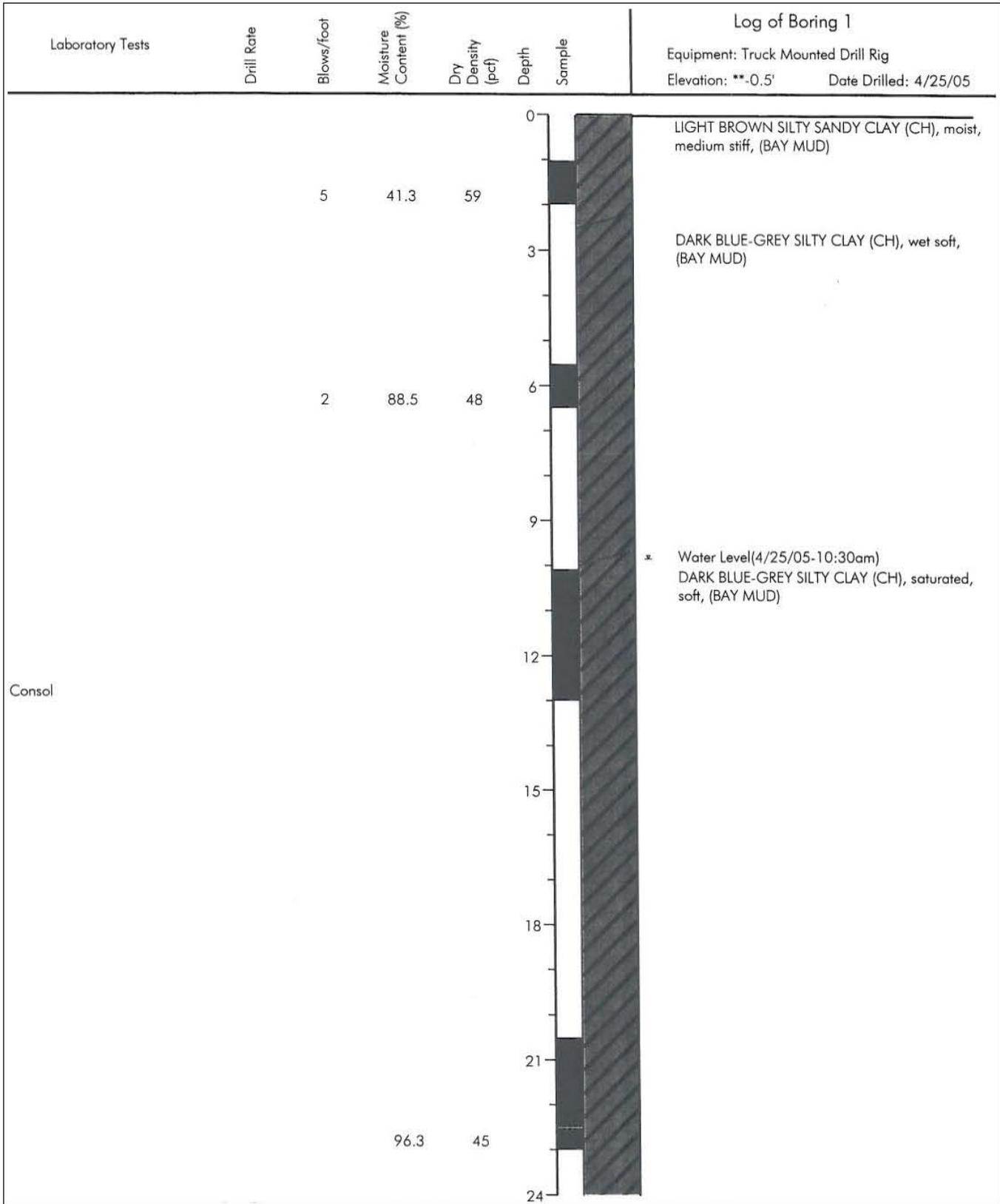


Figure 9-3
Log of Boring 1a



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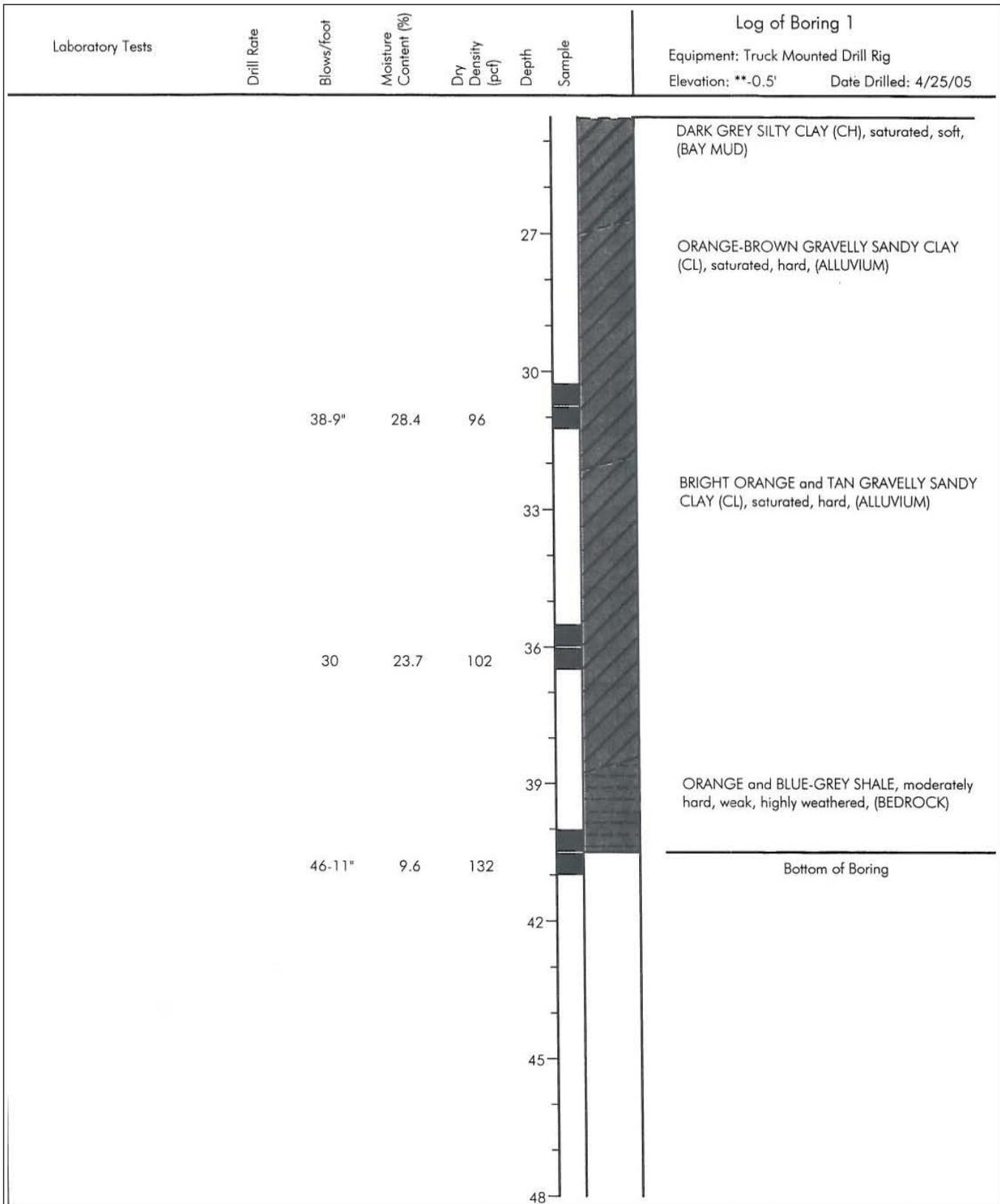


Figure 9-4
Log of Boring 1b



Source: JCH & Associates



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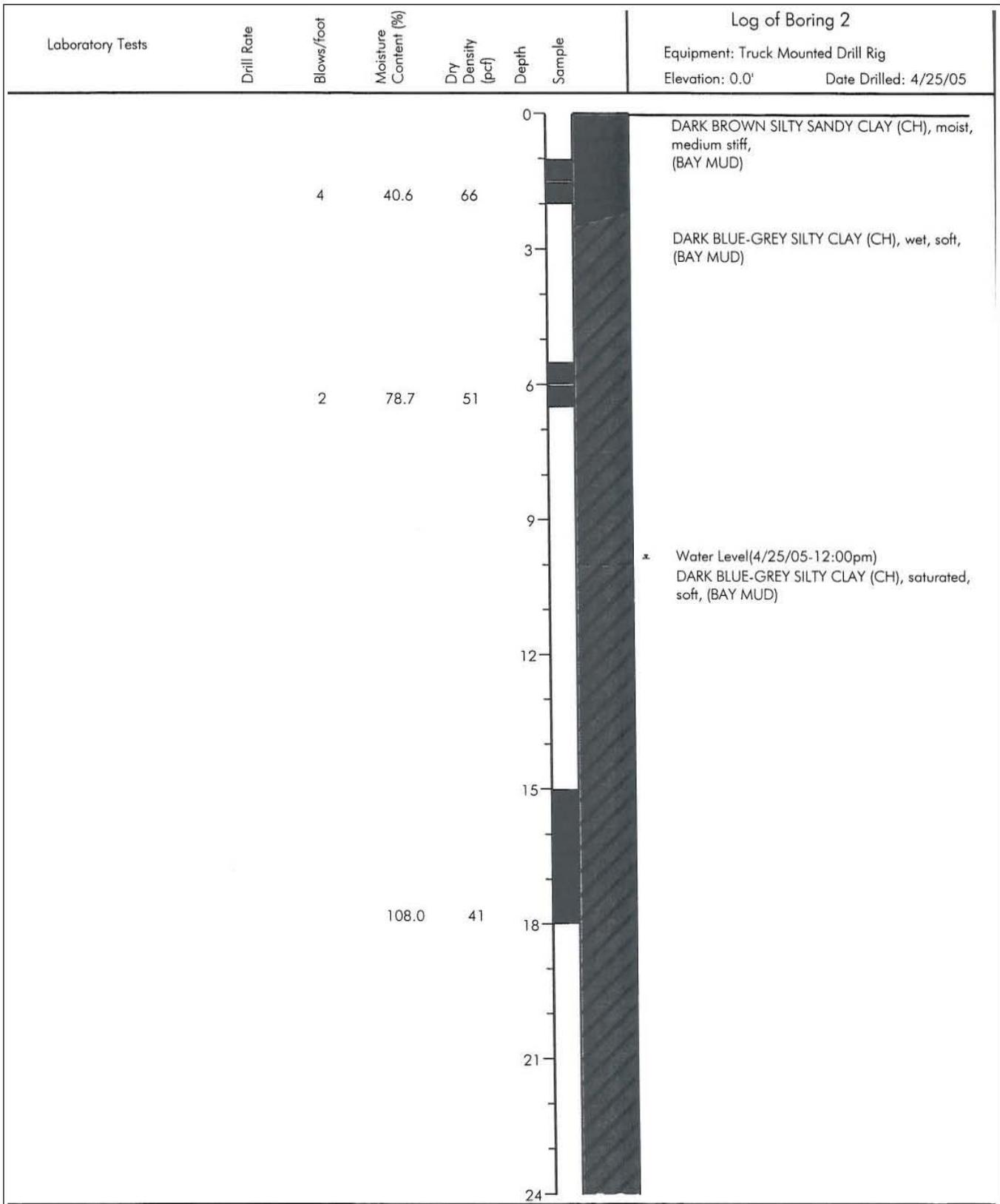


Figure 9-5
Log of Boring 2a



Source: JCH & Associates



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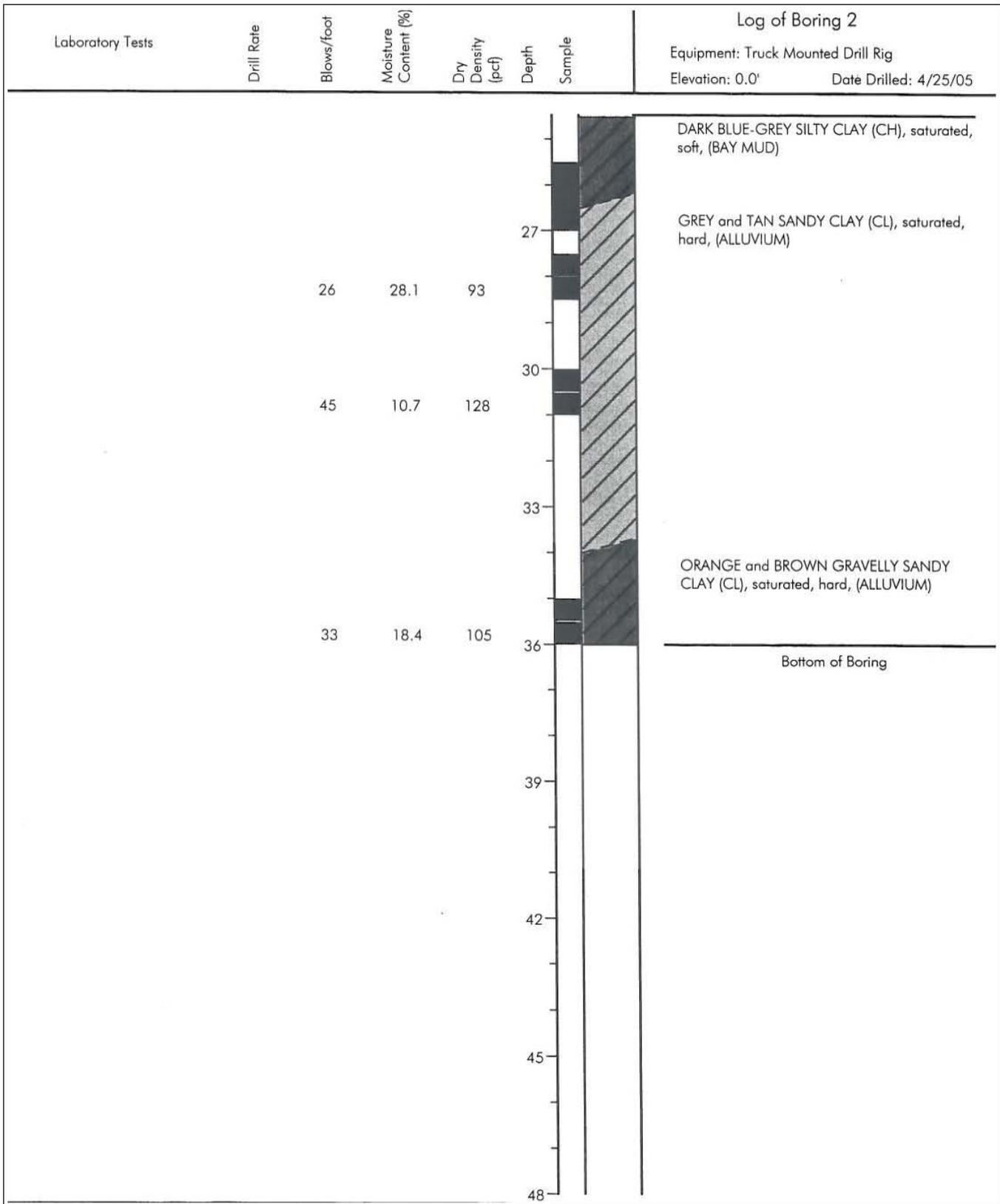


Figure 9-6
Log of Boring 2b



Source: JCH & Associates



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LANDSLIDING AND SLOPE STABILITY

Slope steepness is generally the dominant factor governing slope stability, depending on soil and bedrock conditions. Steep slopes greater than 50% are especially prone to landslides in areas of weak soil or bedrock. The site is flat with little variation in elevation. Therefore, there is little risk due to landsliding.

PRIMARY SEISMIC HAZARDS – SURFACE FAULT RUPTURE

A number of active and potentially active faults are present in the region. According to the State of California Geological Survey, active faults have experienced surface rupture in the past 11,000 years (Holocene). The Alquist-Priolo Earthquake Fault Zoning Act of 1972 initiated a program of mapping active and potentially active (displacement during Quaternary time – the past 1.6 million years) faults throughout the state of California. According to the program, active faults must be zoned and development projects within the Earthquake Fault Zones investigated to establish the location and age of any faulting across the Project site. Active and potentially active faults in Marin County have undergone extensive investigation in the past. The Association of Bay Area Governments (ABAG) has summarized the results from many of these studies to quantify the potential impact to certain areas, while the California Geological Survey has established Earthquake Fault Zone (EFZ) boundaries. According to these maps, the Project site is not within an EFZ. Moreover, the geotechnical investigation observed no evidence of active fault traces or creep zones. Since no faults are mapped across the Project site on any published maps, ground rupture at the site as a result of an earthquake is unlikely, and the risk of ground rupture within the Project boundaries is considered very low.

SECONDARY SEISMIC HAZARDS

Ground Shaking

The Bay Area is considered to be one of the most seismically active regions in the United States. The majority of earthquakes that occur in the Bay Area are associated with crustal movement generally along well-defined, active fault zones. The California Division of Mines and Geology (CDMG) has issued maps that identify “Active Fault Near-Source Zones” to be used with the 1997 Uniform Building Code (UBC) (Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, CDMG/IBCO, February 1998). The only faults in the Project vicinity that are capable of producing a large magnitude event (i.e., Maximum Moment Magnitude 7.0 or greater) that have a high rate of seismic activity are the Hayward Fault and the San Andreas (North Coast) Fault.

The Rogers Creek Fault is located approximately five miles north of the Project site; the Hayward Fault is located approximately 11 miles northeast of the Project site; and the San Andreas (North Coast) Fault is located approximately 16 miles west of the Project site. As

discussed above, a study by the U.S. Geologic Survey (Working Group on Earthquake Probabilities, 1990) indicates that there is a 67 percent chance of an earthquake of Maximum Moment Magnitude 6.7 or higher occurring in the San Francisco Bay Area during the next 30 years. During such an earthquake, the likelihood of very strong ground shaking is highly probable. The Geotechnical report assumes that in the event of a major earthquake on either the San Andreas or Hayward Faults, horizontal ground accelerations of 0.5g or greater are to be expected to occur on the Project site; similar data is available for the Rogers Creek Fault.

Seismically Induced Liquefaction

Soil liquefaction is a phenomenon in which a saturated cohesionless soil located near the ground surface loses strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, fine-grained sands located below the water table. Clays are not considered to be susceptible to liquefaction. In addition, the presence of clay and silt particles in loose sandy soil will increase its resistance to liquefaction. Loose sandy soils were not encountered in the soil samples obtained from test borings on the Project site; therefore, the geotechnical report determined that the risk of liquefaction on the Project site is insignificant.¹⁰

Seismically Induced Densification

Dynamic densification or ground subsidence can occur when dry, cohesionless soils collapse as a result of seismic shaking. This may be particularly true of unconsolidated sand fill or areas with excessive groundwater removal. Fills placed over a large area, such as those proposed to potentially mitigate expansive soils, could induce settlement. The Project site does not contain unconsolidated sand fill. As discussed above, there is a thin layer of disced Bay Mud on the site technically identified as “fill;” however it is native to the site, not imported in the classic manner. For this reason, there is no net load increase on the Bay Mud that may induce settlement. Moreover, the Project site has not experienced excessive groundwater removal. For these reasons, the Project site has a low risk of seismically induced settlement.

Seismically-Induced Landslides

Seismically-induced slope failure is another secondary seismic hazard. During earthquake-induced ground shaking, unstable slopes can fail, causing landslides and debris flows. Due to the nearly level topography of the site, seismically-induced landslides are not considered a hazard.

¹⁰ JCH & Associates, *Geotechnical Investigation*, p. 7

REGULATORY SETTING

ALQUIST PRIOLO EARTHQUAKE FAULT ZONING ACT

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This State law was a direct result of the 1971 San Fernando earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. The Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture, and is not directed toward other earthquake hazards.

DISASTER MITIGATION ACT OF 2000

On October 30, 2000, the President of the United States signed into law the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390). DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions (Section 409) and replaced them with a new set of requirements (Section 322). The new law emphasizes the need for state, tribal, and local entities to coordinate disaster mitigation planning and implementation efforts closely.

Section 322 emphasizes the need for coordination between state, local and tribal levels on hazard mitigation by adding incentives for states that demonstrate an increased commitment to comprehensive mitigation planning and implementation. It also established a requirement for local hazard mitigation plans (as discussed above), and authorized Hazard Mitigation Grant Program funds to be available to a state for the development of these plans. Provisions of the DMA 2000 also include the establishment of performance-based standards for mitigation plans, wherein counties that fail to develop an infrastructure mitigation plan will have their federal share of damage assistance reduced from 75 percent to 25 percent if there were recurrent damage to the same facility or structure in response to the same type of disaster.

SEISMIC HAZARDS MAPPING ACT

Prompted by damaging earthquakes in northern and southern California, in 1990 the State Legislature passed the Seismic Hazards Mapping Act.¹¹ The purpose of the Act is to protect public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo

¹¹ After signed by the Governor the Act was codified in the Public Resources Code as Division 2, Chapter 7.8, Section 2690 et seq., which became operative on April 1, 1991.

Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

- **The State Geologist** is required to delineate the various “seismic hazard zones.”
- **Cities and Counties**, or other local permitting authority, must regulate certain development “projects” within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the Project site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.
- **The State Mining and Geology Board** provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps (available at <http://www.consrv.ca.gov/dmg/shezp/zoneguid.html>) and for evaluating and mitigating seismic hazards (refer to Special Publication 117, Guidelines for Evaluation and Mitigating Seismic Hazards in California, CGS).
- **Sellers (and their agents)** of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

INTERNATIONAL BUILDING CODE/CALIFORNIA BUILDING CODE

The regulatory environment for the design and construction industries consists of building codes and standards covering local, state, federal, land use and environmental regulations. Building codes and standards are developed specifically for the purpose of regulating the life-safety, health and welfare of the public with respect to building construction and maintenance. Once adopted, building codes become law.

Since the early 1900s, the system of building regulations in the [United States](#) was based on [model building codes](#) developed by three *regional* model code groups. However, by early 1990s it became obvious that the country needed a single coordinated set of national [model building codes](#). The nation’s three model code groups decided to combine their efforts and in 1994 formed the [International Code Council](#) (ICC) to develop codes that would have no regional limitations. The first edition of the International Building Code was published in 1997 patterned on three legacy codes previously developed by the organizations that constitute ICC. By the year 2000, ICC had completed the International Codes series and ceased development of the legacy codes in favor of their national successor. Revised editions of this code have been published approximately every three years since that time. In California the California Building Code (CBC) is used, which incorporates by adoption the IBC and includes necessary California amendments.

CITY OF SAN RAFAEL REGULATIONS

The *San Rafael 2020 General Plan* contains goals and policies regarding geologic hazards applicable to a proposed Project, as cited in the following text.

Goal 28 (A Safe Community.): *It is the goal of San Rafael, as the first priority of city government, to provide excellent fire, public safety and paramedic services and to be prepared in the case of disaster or emergency.*

- *Policy S-3. Use of Hazard Maps in Development Review: Review Slope Stability, Seismic Hazard, and Flood Hazard Maps at the time a development is proposed. Undertake appropriate studies to assure identification and implementation of mitigation measures for identified hazards.*
- *Policy S-4. Geotechnical Review: Continue to require geotechnical investigations for development proposals as set forth in the City's Geotechnical Review Matrix. Such studies should determine the actual extent of geotechnical hazards, optimum design for structures, the advisability of special structural requirements, and the feasibility and desirability of a proposed facility in a specified location.*
- *Policy S-4a. Geotechnical Review of Proposed Development: Require soils and geologic peer review of development proposals in accordance with the Geotechnical Review Matrix to assess such hazards as potential seismic hazards, liquefaction, landsliding, mudsliding, erosion, sedimentation and settlement in order to determine if these hazards can be adequately mitigated. Levels of exposure to seismic risk for land uses and structures are also outlined in the Geotechnical Review Matrix, which shall be considered in conjunction with development review.*
- *Policy S-5. Minimize Potential Effects of Geological Hazards: Development proposed within areas of potential geological hazards shall not be endangered by, nor contribute to, the hazardous conditions on the site or on adjoining properties. Development in areas subject to soils and geologic hazards shall incorporate adequate mitigation measures. The City Hill only approves new development in areas of identified hazard if such hazard can be appropriately mitigated.*
- *Policy S-6. Seismic Safety of New Buildings: Design and construct all new buildings to resist stresses produced by earthquakes. The minimum level of seismic design shall be in accordance with the most recently adopted building code as required by State law.*
- *Policy S-8. Seismic Safety of Existing Buildings: Encourage the rehabilitation or elimination of structures susceptible to collapse or failure in an earthquake. Historic buildings shall be treated in accordance with the Historic Preservation Ordinance.*
- *Policy S-17. Flood Protection of New Development: Design new development within the bay mud areas to minimum floor elevation that provides protection from potential*

impacts of flooding during the “100-year” flood. The final floor elevation (elevation of the first floor at completion of construction) shall account for the ultimate settlement of the site due to consolidation of the bay mud from existing and new loads, taking into account soil conditions and the type of structure proposed. Design for settlement over a 50-year period is typically considered sufficient

IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The following thresholds for measuring a Project’s environmental impacts are based upon CEQA Guidelines thresholds:

- Destruction or modification of unique geologic features or extensive landform alteration.
- Exposure of people or structures to substantial adverse effects, including the risk of loss, injury or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based upon other substantial evidence of a known fault (refer to Division of mines and Geology Special Publication 42);
 - Strong seismic ground shaking;
 - Seismic-related ground failure, including liquefaction;
 - Landslides;
- Substantial soil erosion or loss of topsoil;
- Decreased accessibility to known mineral sources or loss or destruction of mineral resources;
- Location on a geologic unit or soils that are unstable or have adverse engineering properties that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, or be located on expansive soils; or
- Contributes significantly to any cumulative geological, soils or seismicity impact.

PROJECT IMPACTS AND MITIGATION MEASURES

Risk of Loss, Injury or Death Involving Ground Rupture

The Project site is not located within the Alquist-Priolo Special Studies Zone and no known active faults traverse the property. The nearest faults considered seismically active (experiencing rupture within the last 11,000 years) are the San Andreas Fault (16 miles southwest) Hayward Fault (7 miles northeast), the Seal Cove-San Gregorio fault (16.5 miles southwest) and the Healdsburg-Rogers Creek fault (9.5 miles northwest). Based on the geotechnical report, there are no geomorphic features suggesting the presence of an active fault extending through the site. Therefore, the risk of ground rupture at the site along a fault trace is low and the impact is considered *less than significant*.

Risk of Loss, Injury or Death Involving Seismic Ground Shaking

A geotechnical investigation was conducted for the proposed Project and the findings were documented in a report and letter prepared by JCH (see **Appendix G**). The geotechnical investigation and report identifies conditions and geologic hazards for this site and, based on these, concludes that the proposed Project is feasible from a geotechnical engineering standpoint provided that the seismic safety standards of the California Building Code are implemented. In accordance with the City of San Rafael's Geotechnical Review Matrix contained in the General Plan 2020, the geotechnical report prepared for this Project was also reviewed by an independent third party engineering firm. The third party reviewer, Kleinfelder, found that the assumptions, conclusions and recommendations identified in the Geotechnical Investigation were acceptable.

In regard to seismic ground shaking, the report states that seismic shaking is highly probable during the life of the Project and recommends that the proposed structure should be designed in accordance with current standards for earthquake resistant construction of which the minimum requirement is that of the California Building Code. Compliance with the California Building Code and the seismic safety standards specified in the Code is mandatory and would be required prior to issuance of a building permit. Since this is a standard requirement of the City, no mitigation measures are necessary. Therefore, the Project's impacts associated with seismic ground shaking are determined to be *less than significant*.

Risk of Loss, Injury or Death Involving Liquefaction and Laterals Spreading

According to the JCH geotechnical investigation prepared for the Project site, the soils encountered on the site were a thin layer of fill (identified as Bay Mud that was disced), Bay Mud, stiff clays and bedrock. The Bay Mud extends to a depth of approximately 28 feet and below the Bay Mud are stiff clays. The geotechnical investigation determined that subsurface geologic formations at the Project site do not contain any appreciable deposits that would be susceptible to liquefaction. Furthermore, seismically induced lateral spreading is considered only a slight risk because of the limited risk of liquefaction. Therefore, Project impacts

related to seismic related ground failure, including liquefaction, would be *less than significant*.

Risk of Loss, Injury or Death Involving Landslides / Slope Failure

According to General Plan 2020 Exhibit 26 (Geology Stability), the Project site is designated as “more stable” and thus the geologic conditions on site are such that the potential for landslides are considered negligible. The site is flat with insignificant variation in elevation. Therefore, *no impact* would result.

Soil Erosion / Loss of Topsoil

The Project site is flat. The proposed Project would require grading for the construction of a recreational facility. This grading would be limited, but could result in short-term erosion or loss of topsoil. A Stormwater Pollution Prevention Permit (SWPPP) must be prepared and approved pursuant to the requirements of the California Regional Water Quality Control Board. An erosion control plan utilizing “best management practices” (BMP’s) would also be required for review and approval by the City of San Rafael Department of Public Works, Stormwater Pollution Prevention Program Manager and the Building Division prior to issuance of a grading permit for the Project. The City also requires sites to be winterized from October 1st through April 30th. These requirements are standard for all Projects and no special conditions or circumstances have been identified for the Project. The City’s SWPPP Program Manager has submitted his requirements for inclusion in the Project conditions of approval. Based on this discussion, the standard requirements addressing erosion control and water quality impacts would ensure that impacts would be *less than significant*.

Unstable Geologic Unit or Soil

Impact Geo-1 Soils on the Project site are composed of highly compressible Bay Mud, which is not suitable for at-grade foundation support. Additionally, the geotechnical report concludes additional fill is not appropriate for the foundation support because of the potential for additional fill to induce settlement. Construction of the proposed Project without proper engineered foundation design is considered a *potentially significant* impact.

As previously discussed, the type of geologic unit or soil that would be susceptible to liquefaction generally occurs when loose, saturated soils experience large vibratory load. The site investigation by the geotechnical engineer did not identify any soil that is susceptible to liquefaction on the Project site. The geologic site conditions are such that it is not likely to become unstable; and geologic hazards related to liquefaction, ground rupture, lateral spreading, and landslide are considered to be remote or non-existent.

The test borings conducted on the site revealed a thin layer (approximately two feet) of fill over compressible Bay Mud. As described previously, the thin layer of fill is also Bay Mud that has been disced and dried, not the classic imported fill placed over Bay Mud. Though technically “fill,” there is not a net increase in load onto the Bay Mud that would induce settlement the way classic fill would.

Bay Mud is the primary soil type on the site. Below the thin layer of disced and dried Bay Mud identified as fill, the Bay Mud extends to approximately 28 feet in depth. Below the Bay Mud, stiff clays and bedrock were encountered. Bay Mud is highly compressible and not suitable for at grade foundation support. Moreover, supporting the foundation with the addition of a layer of compacted fill over the Bay Mud would also be inappropriate because compacted fill would induce settlement. For these reasons, foundations supported on compacted fill are not recommended and the use of slab-on-grade foundations for the sports facility structures is inappropriate. The Project geotechnical study recommends the proposed structures be supported on driven piles, 10- or 12-inches square, pre-cast, pre-stressed made of concrete or steel.

The proposed grading plan and geotechnical report identify that fill will be utilized for the new parking lot and outdoor sports fields, as well as exterior walkways. The grading plan indicates the Project will involve 3,000 cubic yards of cut and 35,000 yards of fill material. Approximately 32,000 cubic yards of engineered fill will be imported. JCH & Associates estimate that six inches of differential settlement will occur for every foot of new fill; for lightweight landscaping material, the settlement would be two-thirds of this amount.¹² In reviewing the use of additional fill on the site, Kleinfelder found that if significant fill is used on the site, the resulting ground surface settlements could be large and thereby have an effect on surface drainage, utility lines (storm drains and sanitary sewer), and entrances and exists to the building.¹³ In response to this, JCH & Associates agree that areas outside the structural envelope that receive fill will experience differential settlement, and recommend that utilities from the structure to the street be designed to accommodate this. Sewer lines should be provided with swing points and gas, water and electrical lines should be provided with flexible lines with sufficient slack to accommodate anticipated settlement. JCH note that driveway and ramp approaches from the street to the building will also experience settlement and recommends that the driveway slabs be provided with hinge joints and reinforced to structurally span the settlement.

The geotechnical report concludes that the proposed development is feasible from a geotechnical engineering standpoint but would result in *potentially significant* impacts

¹² JCH & Associates, *Geotechnical Investigation*, p. 10.

¹³ Kleinfelder, Inc., *Geotechnical Peer Review, New Recreation Facilities at San Rafael Airport, San Rafael, California*, September 9, 2005, p. 2.

associated with possible settlement. For this reason, the following mitigation measures are recommended:

Mitigation Measures:

MM Geo-1 Geotechnical Engineering Recommendations. Prior to the issuance of the building permit or grading permit, the following recommendations contained in the Geotechnical Report prepared by John C. Hom & Associates, dated May 9, 2005 and November 23, 2005, shall be incorporated into the Project design. Prior to issuance of a grading or building permit, written verification of conformance with these recommendations shall be submitted by the Project geotechnical engineer to the City of San Rafael:

- a) A soil profile Type Se in accordance with the 2006 International Building Code shall be used in the design of the proposed Project.
- b) All areas to be graded should be stripped of any debris and organic materials. The organic material should be removed off-site and disposed of. Excavation should then be performed to achieve any finished grades.
- c) Where fill is required, the exposed surface should be scarified to at least 6 inches, moisture-conditioned and compacted to at least 90-percent relative compaction per ASTM D-1557 test procedure. Where soft soils are encountered, treatment of the soft soils with lime maybe required. The fill should be placed in lifts of 8 inches or less in loose thickness, moisture conditions and compacted to at least 90 percent compaction. The fills materials should be should have a plastic index of 15, or less, and be no larger than 6 inches.
- d) Finished slopes are to be no steeper than 2-horizontal to 1-vertical (2:1). If steeper slopes are necessary, they should be retained. The finished slops should be planted with deep-rooted ground cover.
- e) The proposed structure should be supported by 10-12 inch square driven piles which are pre-cut and pre-stressed concrete or steel piles. These piles should be driven continuously through the Bay Mud, the stiff soils and to refusal in bedrock (penetrate into bedrock no more than 10 feet). Ten and 12-inch piles should be driven with a hammer and maintained in good operating condition with a minimum rated energy of 20,000 and 30,000-foot pounds per blow, respectively. The piles should not deviate from vertical by more than ¼ inch per foot. Indicator piles should be driven near the corners of the building and

interior of the building to determine pile depths and production piles should be ordered based on the indicator piles. The refusal blow count would depend on the hammer that is utilized and the structural capacity of the pile. The piles should be driven at least 5 feet into bedrock. The pile driving subcontractor should submit to the Soils Engineer specification of the pile hammer and equipment to be used.

- f) Down draft would occur on the piles due to consolidation of Bay Mud. The down drag forces should be deducted from the structural capacity of the piles. For 10 and 12-inch concrete piles, drag loads should be 22 and 28 tons respectively. For different sized piles, the down draft should be proportionate with the cross sectional perimeter of the pile.
- g) To resist lateral loads, a passive pressure of 250 pcf should be used.
- h) Slab on grade should not be used for the mezzanine structure. Instead, supported slabs should be used. The slab subgrade should be firm and non-yielding. In areas where slab on grade is used, such as exterior walkways, the slab on grade should be tied to foundations and reinforced to span from grade beam and/or pile to grade beam and/or pile. The upper 6 inches of slab subgrade should be compacted to at least 90 percent relative compaction. Slabs should be underlain by at least 4 inches of clean, free-draining crushed rock or gravel. If migration of moisture through the slabs would be objectionable, a vapor barrier should be installed between the slab and the rock. Two inches of sand may be provided above the vapor barrier. Expansive soils shall be maintained at an elevated moisture content of at least two (2) percent above optimum until the slab is poured. Exterior slabs should be separated from foundations because of potential differential settlement.
- i) Areas outside the structural envelope that receive fill will experience differential settlement and utilities from the structure to the street shall be designed to accommodate this. Sewer lines shall be provided with swing points. Gas, water and electrical lines shall be provided with flexible lines with sufficient slack to accommodate anticipated settlement.
- j) Driveway and ramp approaches from the street to the building will also experience settlement. Driveway slabs shall be provided with hinge joints and reinforced to structurally span the settlement.
- k) Surface water drainage should be diverted away from slopes and foundations. Gutters should be provided on the roofs and downspout

should be connected to closed conduits discharging into the landscaped area where possible, per City standards.

- l) Roof downspouts and surface drains must be maintained entirely separate from sub-drains and foundation drains. The outlets should discharge onto erosion resistant areas of the landscaping where possible, per City standards.
- m) The Project geotechnical engineer shall conduct inspections during construction of the Project to confirm that the recommendations are properly incorporated. Prior to final occupancy of the building, the Project geotechnical engineer shall submit written verification that the Project was constructed in accordance with the recommendations identified in the geotechnical reports.

Resulting level of significance.

Implementation of the migration measures recommended above, taken from the geotechnical studies prepared by JCH & Associates and Kleinfelder, Inc would reduce related impacts to a level considered *less than significant*.

It should be noted, however, that the geotechnical investigation also recognized that pile driving could cause vibration resulting in cosmetic damage to adjacent properties. The study recommends that the owner or contractor visit the adjacent property owners to map out the existing conditions and that vibration monitors be installed to monitor pile driving vibrations. However, the noise analysis provided in Chapter 12 of this document provides an analysis of ground-borne vibration resulting from pile driving that determined this measure is not necessary. The noise analysis determined that peak particle velocity from vibration would be less than 0.1 inches per second (in/sec PPV) at 200 feet. The Federal Transit Administration recommends a vibration threshold of 0.2 in/sec for fragile buildings. The closest existing structures to the area of pile driving would be approximately 500 feet to the north in McGinnis Park, 900 feet to the west at the airport, and over 1,000 feet to the south at residences at Vendola Drive. This analysis determined that the estimated construction vibration would be less than 0.1 in/sec PPV at 200 feet and even lower at greater distances; therefore, the potential for off-site cosmetic structural damage to result from pile driving vibrations is determined to be *less than significant*.

Expansive Soil

Expansive soils experience volumetric changes with moisture content. The onsite Clays are considered expansive spoils by the International Building Code. However, given the depth of the clays, the geotechnical study determined their expansive nature would not pose a significant impact. Nevertheless, as discussed above, fill material will be placed over Bay Mud in areas that do not support the proposed structure. These areas include utilities, the new

parking lot, outdoor sports fields and exterior walkways. JCH & Associates state that exterior walkway slabs may be used, however the expansive soils would need to be maintained at an elevated moisture content of at least two percent above the optimum until the slab is poured. This recommendation is outlined in **MM Geo-1i** above. These results of the geotechnical investigation conducted by JCH were reviewed by Kleinfelder, a third party peer reviewer, and found to be acceptable and accurate. Therefore, a *less than significant* impact would occur.

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HAZARDS

INTRODUCTION

The purpose of this section is to provide an analysis of the Project within the context of safety and environmental hazards that may be present on the site and those that the Project may pose to others. The scope of this analysis includes a discussion of the potential for hazardous materials to be present on the Project site. Additionally, due to the proximity of the Project to operations of the San Rafael Airport, the bulk of this section's analysis focuses on hazards that the proposed Project may pose to aeronautical safety

Information in this section is based on site inspections conducted on the site between March and December 2005, the City's hazardous materials database maintained by the San Rafael Fire Department, the City of San Rafael *General Plan 2020*, the City of San Rafael Municipal Code, and the Aeronautical Safety Review report prepared for the Project by Mead & Hunt, Inc.

SETTING

SITE SETTING AND OBSERVED SITE FEATURES

The Project site is located on the site of the San Rafael Airport, an existing privately owned and operated airport. The airport features and activity are described below. The airport is not included on a list of hazardous materials sites maintained by local, state or federal regulatory agencies. The airport site stores, maintains and uses materials considered to be hazardous as part of aircraft maintenance and overall airport operations activities; however, the Project site, which is a portion of the overall airport site, is physically separated from the airport operations activities and does not support any observed hazardous site features.

The airport site has been in operation since the late 1960s and has not been used for agricultural purposes within the last forty years; therefore, no soils contaminated as a result of agricultural practices are present on the site.

AIRPORT FEATURES AND ACTIVITY

The Land Use section of this document provides a development history of the San Rafael Airport site that includes a description of existing uses and operations. The information contained in this section expands upon that description.

The Airport Permit for San Rafael Airport, which is issued by the California Division of Aeronautics, classifies the facility as a “Special-Use Airport.” This type of facility is defined as “an airport not open to the general public, access to which is controlled by the owner in support of commercial activities, public service operations, and/or personal use” (California Code of Regulations, Article 1, Section 3527 (w)).

San Rafael Airport’s Master Use Permit, issued by the City of San Rafael, establishes several restrictions on aircraft operations, including the following:

- Maximum of 100 based aircraft
- Use of airport limited to based aircraft; no transient or guest aircraft are permitted to use the airport
- No flight training activity

Airfield

San Rafael Airport is approximately 120 acres in size. The airport has a single runway oriented in a northeast/southwest direction. Runway 4-22 is 2,140 feet in length and 50 feet in width. Medium-intensity lights define the lateral limits of the runway and the runway thresholds. The airport is open 24-hours per day. The runway is a visual facility; all flights are conducted under visual conditions without the aid of straight-in instrument approach procedures.

Activity Level

Due to certain provisions and restrictions stipulated in the airport’s Master Use Permit, aircraft activity level at San Rafael Airport is low. There are 80 aircraft currently based at the airport. Under the use permit, the airport can accommodate an additional 20 aircraft. Aircraft operations are conducted primarily by small, single-engine aircraft such as the Bonanza, Mooney, Piper, and Cirrus. Based on observations, airport personnel estimate that aircraft operations do not exceed 15,000 operations annually (i.e., 7,500 takeoffs and 7,500 landings). The majority of aircraft operations occur during daylight hours (85%) and on weekends (60%). Aircraft activity is expected to remain essentially unchanged.

Traffic Pattern

San Rafael Airport has a “Fly Friendly” policy which is a voluntary good neighbor program of the aviation community not to disturb people on the ground. In an effort to avoid flying over residential neighborhoods west and south-southeast of the airport, aircraft typically depart from Runway 4 heading northeast over the Bay and land on Runway 22 from the northeast. Pilots with destinations north or west of the airport will depart Runway 4 (as is typical) and make a turn left over McInnis Park. The same pattern is used for pilots landing from the north or west.

Aircraft will occasionally depart from Runway 22 (heading west) when there are strong winds out of west. Under these conditions, pilots are instructed to follow the train tracks heading west until they reach Highway 101. The train tracks give visual guidance to pilots in order to avoid overflight of the Contempo Marin Mobile Home Park located west of the airport.

The Airport Permit issued by the state indicates that there is a right traffic pattern to Runway 22 and a left traffic pattern to Runway 4. This flight pattern keeps aircraft northwest of the airport. The traffic pattern altitude is 1,000 feet above ground.

Figure 10-1 depicts the aircraft traffic patterns for San Rafael Airport.

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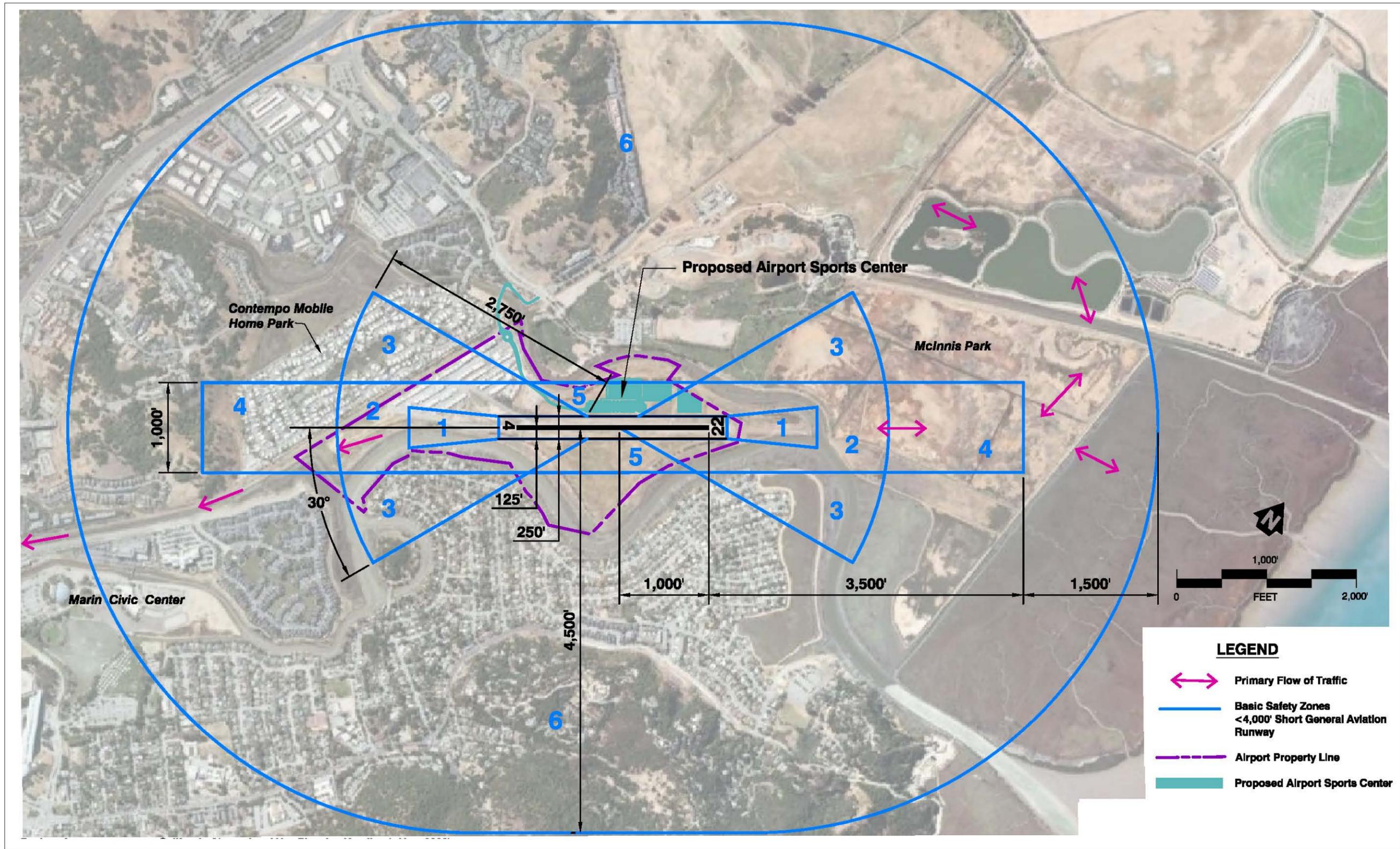


Figure 10-1
San Rafael Airport Basic Safety Zones



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REGULATORY SETTING

DEFINITION OF HAZARDOUS MATERIALS

A material is considered hazardous if it appears on a list of hazardous material prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations (CCR) as:

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

Chemical and physical properties cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity. These terms are defined in the CCR, Title 22, Sections 66261.20-66261.24. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The following provides the regulatory context within which hazardous materials are regulated on the national, state and local levels.

FEDERAL TOXIC SUBSTANCES CONTROL ACT

Congress enacted the Toxic Substances Control Act (TSCA) in 1976, to become effective January 1, 1977. The TSCA authorizes EPA to secure information on all new and existing chemical substances and to control any of these substances determined to cause an unreasonable risk to public health or the environment. The TSCA also includes requirements for the storage, use, and disposal of PCB-containing materials.

CALIFORNIA HEALTH AND SAFETY CODE

The City of San Rafael is currently responsible for implementing Chapter 6.95 of Division 20 of the California Health and Safety Code (Section 25500 et seq.), relating to hazardous materials release response plans and inventory.

¹ *California Code of Regulations*, Title 22, Section 66260.10 (2003)

CALIFORNIA WATER CODE

California Water Code Section 231 requires the California Department of Water Resources (DWR) to develop well standards to protect California's ground water quality. DWR Bulletin 74-90 (Supplement to Bulletin 74-81), California Well Standards, Water Wells, Monitoring wells, Cathodic protection wells, June 1991, contains the minimum requirements for constructing, altering, maintaining and destroying these types of wells. The standards apply to all water well drillers in California and the local agencies that enforce them.

CALTRANS DEPARTMENT OF AERONAUTICS

Flight activities of San Rafael Airport are primarily governed by Caltrans–Department of Aeronautics, through a permit to operate a private airport; and the City of San Rafael. The FAA is also involved in the background because certain regulations implemented by the permit issued by Caltrans are derived by the FAA. Because the San Rafael is privately owned and operated, it is not subject to regulatory authority of the Marin County Airport Land Use Commission.

MARIN COUNTY HAZARDOUS MATERIALS INCIDENCE RESPONSE PLAN

The Marin County Disaster Council Hazardous Materials Committee established the Hazardous Materials Response Team, which prepared the Hazardous Materials Incidence Response Plan and incorporated it into the Marin County Disaster Plan in 1984. The Hazardous Materials Plan designates a unit of the San Rafael Fire Department to contain hazardous materials spills and a unit of the County Fire Department to identify the type of spill and enforce applicable health laws and regulations regarding such spills. The Plan and fire unit designations were adopted via a Joint Powers Agreement by all Marin County Cities, Marin County, the California Highway Patrol and the County Fire Districts.

MARIN COUNTY HAZARDOUS WASTE MANAGEMENT PLAN

The Marin County Hazardous Waste Management Plan was also adopted by Marin County and all Marin County Cities, including San Rafael. This plan is required by state law and is intended to evaluate local problems and needs and make recommendations to better protect public health and safety and the environment from improper management of hazardous wastes.

CITY OF SAN RAFAEL GENERAL PLAN 2020 ELEMENTS AND VISION

The *San Rafael General Plan 2020* contains the following goals and policies regarding hazards and hazardous materials applicable to a proposed Project:

Goal 28 (A Safe Community): It is the goal of San Rafael, as the first priority of city government, to provide excellent fire, public safety and paramedic services and to be prepared in the case of disaster or emergency.

- *Policy S-12. Use of Environmental Database in Development Review. Review the San Rafael Fire Department's database of contaminated sites at the time of development is proposed. Undertake appropriate studies to assure identification and implementation of mitigation measures for sites on or near identified hazards.*
- *Policy S-13. Potential Hazardous Soil Conditions. Where development is proposed on sites with known previous contamination, sites filled prior to 1974 or sites that were historically auto service, industrial or other land uses that may have involved hazardous materials, evaluate such sites for the presence of toxic or hazardous materials. The requirements for site-specific investigation are contained in the Geotechnical Review Matrix.*
- *Policy S-14. Hazardous Materials Storage, Use and Disposal. Enforce regulations regarding proper storage, use and disposal of hazardous materials to prevent leakage, potential explosions, fires, or the escape of harmful gases, and to prevent individually innocuous materials from combining to form hazardous substances, especially at the time of disposal*
- *Policy S-16. Transportation of Hazardous Materials. Enforce Federal, State and Local requirements and standards regarding the transportation of hazardous materials. Support, as appropriate, legislation that strengthens safety requirements for the transportation of hazardous materials.*
- *Policy S-30. Maintenance and Landscaping for Fire Safety. Encourage, where appropriate, special planning removal and maintenance programs to reduce potential fire hazards in the hills, wildland areas and urban interface areas.*
- *Policy S-31. New Development in Fire Hazard Areas. Design new development located on or adjacent to natural hillsides to minimize fire hazards to life and property.*
- *Policy S-38. Continue updating the Building Code and Fire Code Update. Continue updating the Building and Fire Codes as necessary to address earthquake, fire and other hazards and support programs for the identification and abatement of existing hazardous structures.*
- *Policy S-39. Public Safety Facilities. Ensure that public safety facilities are designated and constructed adequately to efficiently operate paramedic, fire and police services, including in times of disaster.*

The San Rafael Zoning Ordinance is adopted to promote and protect the public health, safety, peace, comfort and general welfare. The following zoning ordinance regarding hazardous soil conditions is applicable to the proposed Project:

- *14.16.180 Hazardous soils conditions. New development on lots filled prior to 1974 or on lots that were used for auto service uses, industrial uses or other land uses which may have involved hazardous materials, shall be evaluated for the presence of toxic or hazardous materials prior to development approvals. The requirements for review are set forth in the geotechnical review matrix in the General Plan 2020. (Ord. 1625 § 1 (part), 1992).*

AERONAUTICAL SAFETY FACTORS

BASIC SAFETY ZONES

The *California Airport Land Use Planning Handbook (Handbook)* published January 2002 by the California Division of Aeronautics defines a set of basic safety zones for five different types of general aviation runways. Selection of the applicable set of safety zones is based upon the physical and operational characteristics of a particular airport (e.g., airport's runway length, type of instrument approach procedure, etc.). There are six safety zones which divide the airport vicinity. Each safety zone is characterized by a risk level that is distinct from the other zones. The *Handbook* identifies land uses which are considered acceptable or unacceptable within each zone.

Basic safety zones for “general aviation airports with runway lengths of less than 4,000 feet with visual approaches only” are applied for San Rafael Airport. **Figure 10-1** depicts the basic safety zones for San Rafael Airport. The Airport Sports Center falls within the three basic safety zones listed below. The general risk factors prevalent in each of the three zones are also noted.

Zone 2 – Inner Approach/Departure Zone

- Encompasses areas overflowed by aircraft at low altitudes
- Exposed to substantial risk

Zone 5 – Sideline Zone

- Encompasses the close-in area lateral to the runway which is not normally overflowed
- Risk of an aircraft accident is relatively low

Zone 6 – Traffic Pattern Zone

- Encompasses the outer areas of the airport's influence area
- Likelihood of an aircraft accident is low

INTENSITY OF USE

As part of the Project's airport safety review, aircraft accident records for the San Rafael Airport were obtained from the National Transportation Safety Board (NTSB). According to NTSB records, there have been only two accidents in the last two years; one occurring off-airport, approximately ¼ mile away, and one occurring close to the runway.² Due to the infrequency of aircraft accidents at a particular airport, identifying the probable location of the next aircraft accident is nearly impossible. For this reason, in the State of California, the accepted practice of measuring airport land use risks is to use the basic safety zones provided in the *2002 Handbook*. The basic safety zones are based on nationwide general aviation aircraft accident data and represent aircraft accident distribution patterns. For San Rafael Airport, the basic safety zones for a short general aviation runway of less than 4,000 feet are used to assess compatibility between the proposed sports center and the Airport.

While rare or infrequent, the potential exists that an aircraft accident will occur on the Project site. Thus, protecting against it is essential to airport land use safety compatibility. According to the *Handbook*, the most direct means of limiting the potential consequences of an off-airport accident is to limit the intensity of use. Intensity of use is measured in terms of the number of people which the development can attract per acre. Usage intensity is generally the basic factor upon which the acceptability or unacceptability of each use is judged.

Although avoidance of intensive uses is always preferable, a concept which may be acceptable in some situations is special risk-reduction building design. Buildings provide substantial protection from the crash of a small airplane. Special risk-reduction construction features include:

- Single story height
- Concrete walls
- Upgraded roof strength
- Limited number of windows
- No skylights
- Enhanced fire sprinkler system (e.g., designed in a manner that the entire system would not be disabled by an accident affecting one area.)
- Increased number of emergency exits beyond California Building Code requirements

² Maranda Thompson, Mead & Hunt, personal communication, August 29, 2008.

Application of the *Handbook's* intensity criteria is based on the extent of development around the airport. The current setting around San Rafael Airport is characterized as “Suburban; partially undeveloped.” The *Handbook* identifies the maximum intensity of nonresidential uses deemed acceptable for each of the 6 safety zones. For the San Rafael Airport, an airport in a suburban location, the maximum number of people per acre is noted below for each of the three applicable safety zones.

**TABLE 10-1:
MAXIMUM NONRESIDENTIAL INTENSITY CRITERIA**

Zone	Description	Average Number of People per Acre	Risk- Reduction Bonus (Average) (1.5 x avg.)	Maximum Number of People per Single Acre (2 x avg.)	Risk- Reduction Bonus (Single Acre) (1.5 x single)
2	Inner Approach / Departure Zone	40	60	80	120
5	Sideline Zone	100	150	200	300
6	Traffic Pattern Zone	150	225	300	450

Definitions:

- Average number of people per acre criterion—takes the total number of people anticipated to be on the project site and divides it by the size of the parcel in acres.
- Single acre criterion—looks at the highest concentration of people on the project site within a one-acre area.
- Risk-reduction bonus—projects incorporating risk-reduction building design qualify for the higher intensity bonus.

It should be noted that the Marin County Airport Land Use Commission has a compatibility plan only for Gness Field, not San Rafael Airport. There are no ALUC safety criteria or policies applicable to San Rafael Airport.

HIGHLY RISK-SENSITIVE USES

Certain types of land uses are commonly regarded as requiring special protection from hazards such as potential aircraft accidents. Risk-sensitive uses are those which would attract small children and the infirm. A common element among these groups is the inability—either because of inexperience or physical limitations—to move out of harm’s way.

HAZARDS TO FLIGHT

Hazards to flight can be the cause of an accident. Hazards to flight fall into three basic categories:

- Obstructions to the airspace required for flight to, from, and around an airport;
- Wildlife hazards, particularly bird strikes; and
- Other forms of interference with safe flight, navigation, or communication

OBSTACLE CLEARANCE REQUIREMENTS

Part 77 of the Federal Aviation Regulations (FAR), *Objects Affecting Navigable Airspace*, establishes standards for determining obstructions to navigable airspace and the effects of such objects on the safe and efficient use of that airspace. Whether a particular object constitutes an airspace obstruction depends upon the object's proximity to the airport and the height of the object relative to the runway elevation. The acceptable height of objects near an airport is most commonly determined by application of standards set forth in Part 77 of the Federal Aviation Regulations. These regulations establish a three-dimensional space in the air above an airport. Any object which penetrates this volume of airspace is considered to be an obstruction and must be analyzed to determine whether it constitutes a hazard to flight. Motor vehicles on public roads are assumed to have a height of 15 feet; those using private roads or parking lots are assumed to be 10 feet in height except where taller vehicles are known to travel. It should be noted that most passenger vehicles do not exceed a height of 10 feet.

Federal and State regulations (Public Utilities Code, Section 21659 and Code of Regulations 3543) require that the Federal Aviation Administration (FAA) and the California Division of Aeronautics be notified of proposed construction or alteration of objects—whether permanent, temporary, or of natural growth—if those objects would be of a height which exceeds the FAR Part 77 criteria.

The Project site underlies the transitional surface. The transitional surface is situated along the sides of the primary surface and approach surfaces. It slopes upward 1 foot for every 7 feet horizontally (7:1) for a horizontal distance of 5,000 beginning 125 feet from the runway centerline.

OTHER FLIGHT HAZARDS

In addition to the physical hazards to flight posed by tall objects, other land use characteristics can present visual hazards. Visual hazards include distracting lights, glare, and sources of smoke.

IMPACT ANALYSIS

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a project's environmental impacts are based on CEQA Guidelines. For the purposes of this EIR, impacts are considered significant if the following could result from the implementation of the proposed Project:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
6. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area;
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

PROJECT IMPACTS

Exposure to Hazardous Materials and Substances

The proposed Project location is not included on a list of hazardous materials maintained by the State Department of Toxic Substances Control; would not create significant hazards to the public or the environment based on the recreational nature of the proposed use and no handling of hazardous materials would occur as part of proposed Project; no hazardous

materials are proposed to be used or stored at the site; and the Project site is not within one-quarter mile of either an existing or proposed school.

The entire airport site (i.e. “Parcel B”), which includes the Project site, has been permitted for an airport use since 1969; and aside from sheep grazing approximately ten years ago, no farming activities have occurred at the airport in the last forty years. There are likely hazardous materials on the airport site associated with airport operations and use; however, the airport operations would be separate and distinct from the operations of the proposed Project and would have no impact on the recreational facility’s users. The site is not included on a list of hazardous materials sites maintained by the State Department of Toxic Substances Control.³ The fact that the site has not been farmed indicates there would be no potential impact associated with the exposure of the public to pesticides, contaminated soils or other hazardous farming-related materials. Therefore, *no impacts* would result in these areas as a result of the proposed Project.

This proposed recreational facility would not include the transport, use, or disposal of hazardous materials. The recreational facility does include two outdoor sports fields to the east of the new structure and site landscaping around the proposed new building and within the parking lot. As proposed, the two outdoor fields would utilize synthetic all weather turf and given their synthetic nature, no fertilizers or herbicides would be used. Additionally, the turf is designed for use on sports fields of this type; therefore, it’s synthetic nature would not pose a hazardous materials risk to the facility’s users. It is assumed that the site landscaping would use some fertilizers and herbicides, but the landscape areas are minimal and herbicides or fertilizers would not typically be used in significant amounts; therefore the use of some fertilizers and herbicides in landscaping would not be an exposure threat to the facility’s users. Lastly, the proposed drainage plan would convey all runoff from this site through vegetated bio-swailes located to the north and south of the proposed building. These swales are designed to be consistent with the City’s Storm Water Pollution Prevention standards and would filter any contaminants before they leave the site and enter the creek to the north. Therefore, *less than significant* impacts would result.

Emergency Response or Evacuation Plan

The proposed Project would be developed on an undeveloped portion of San Rafael Airport property. The property is surrounded to the north by residential and recreational uses, to the south by residential uses and to the west by industrial, commercial and residential uses. The sole public roadway providing access to this property is Smith Ranch Road, a major arterial roadway in the City of San Rafael.

³ State Department of Toxic Substances Control website, <http://www.dtsc.ca.gov/>, accessed August 12, 2008.
See also: **Appendix F**.

The City of San Rafael's Disaster Plan designates large area evacuation routes, including Highway 101 and Interstate 580, and other major arterials in the City. The City of San Rafael Fire Department has reviewed the proposed Project and found that development of this Project would not interfere with access to any referenced roadway.⁴ Additionally, the Public Services analysis in Chapter 14 documents that the Fire Department's review of the Project site plan determined that the existing single-lane bridge and approach drive is adequate for emergency vehicle access. The Applicant intends to replace the existing single-lane bridge by placing a new deck atop the existing piles, which will result in two motor vehicle lanes (one in each direction) and a five-foot pedestrian/bicycle lane. This will improve the Project site's ability to provide adequate emergency access (see Chapter 13, Transportation and Traffic).

There is no emergency vehicle access (EVA) to the site. However, considering the Project is proposed to be located on an airport site, the Project site provides an opportunity for emergency access via airplane or helicopter in the event of an emergency. This would enable emergency responders to access the site if a disaster event renders the bridge crossing the North Fork of Gallinas Creek impassible.

Based on the fact that the City Police and Fire Departments have reviewed the proposal and found that it would not interfere with access to area evacuation routes, the fire department considers the existing bridge and approach sufficient for emergency access, replacement of the bridge deck with one that provides two lanes and pedestrian/bicycle access will improve emergency access, and the fact that the site provides emergency access for aircraft, this impact is considered to be *less than significant*.

Wildland Hazards

The proposed Project would result in the development of a recreational facility at an existing airport development. The developed portion of the property has structures and gravel and paved driveways servicing the existing non-aviation and aviation-related facilities. The remainder of the site is predominately grass that is maintained on an annual basis for weed abatement, wildlife control (for aviation safety), and fire suppression. The proposed Project would not increase the potential for wildland fires. The majority of the existing non-aviation and aviation-related facilities on this property have recently been rebuilt and as part of this upgrade, new fire hydrants and fire sprinkler systems were installed on the site and within the new structures. A standard condition of approval of the Fire Department would require that an additional fire hydrant be installed in the area of the proposed new structure. Furthermore, the proposed new structure would be required to include commercial fire sprinkler system and this has been indicated on the project plans. Lastly, the Project site is not considered to be a wildland area by the Fire Department. Based on this analysis, a *less than significant* impact would occur.

⁴ Keith J. Shoenthal, Fire Marshal, San Rafael Fire Department, Memorandum, October 27, 2005.

Airport Land Use Plan & Hazards in Vicinity of a Public or Private Airstrip

Hazards to People

Impact Haz-1a The highest estimated concentration of people in a single-acre area on the Project site would be 216, which slightly exceeds the single-acre criterion of 200 people for Airport Safety Zone 5–Sideline Zone (Table 10-1). Although the actual occupancy level is likely to be lower than the estimate, this is considered a *potentially significant* impact and risk-reduction design features should be incorporated into the design of the facility.

Impact Haz-1b The proposed Project will likely attract users and spectators that will include young children and the elderly. These groups of people may find it difficult to move out of harm's way if an aircraft accident should occur. Therefore, this is considered a *potentially significant* impact and risk-reduction design features should be incorporated into the design of the facility.

The proposed recreational facility would be located on a portion of the 119.5 acre airport site. The San Rafael Airport is a private airport and not considered public or a public use airport and therefore is not located within an airport land use plan. Marin County Airport (Gross Field) is the nearest public airport to the site, located north of the City of Novato, approximately 10 miles from the project site. No existing or proposed public use airports are located within two miles of the site. Therefore, the project would not result in safety hazards associated with public or public use airports.

As discussed, the San Rafael Airport is a private airport and not subject to an airport land use plan. The Airport Permit for the San Rafael Airport is issued by the California Division of Aeronautics, which classifies the facility as a "Special Use Airport." The City of San Rafael also issued the Airport's Master Use Permit, which establishes several restrictions on aircraft operations, including the following:

- Maximum of 100 based aircraft
- Use of airport limited to based aircraft; no transient or guest aircraft are permitted to use the airport
- No flight training activity
- No air traffic control

The information provided on the proposed Airport Sports Center does not indicate the normal maximum occupancy of the facility. In order to assess the level of risk, the number of people who would occupy the overall site or any single acre of the Project at any given time needs to

be determined. The average usage intensity of the facility can be estimated using the following two methods:

- The *parking ordinance* method relies upon the local jurisdiction's requirements for automobile parking for various types of land uses. The number of parking spaces can then be multiplied by an estimated number of people per vehicle to determine the total number of occupants. The parking calculation assumes that there are 1.5 people per automobile. We must recognize, however, that some people may drive by themselves, or arrive by transit or other means. Therefore, the resulting estimate using this methodology typically provides a number on the lower end of the likely range of the usage intensity. That being said, the surplus parking incorporated into this project will increase the resulting intensity number, but only marginally.
- The *maximum occupancy* method is based upon the occupancy levels set forth in the California Building Code (CBC). For the purposes of ensuring fire safety, the CBC specifies an assumed minimum number of square feet per person and uses this number to calculate the maximum occupancy level of a building. Because most buildings are seldom occupied to the maximum level assumed in the CBC—in part because ancillary functions (rest rooms, storage space, etc.) have lower occupancy—surveys of actual occupancy levels conducted by various agencies have indicated that many uses are generally occupied at no more than 50% of their maximum occupancy levels, even at the busiest times of day. Even with this adjustment, the CBC-based methodology typically produces intensities at the high end of the likely range.

In determining the area on the Project site to receive the greatest use intensity, Mead & Hunt utilized Planning Commission Report No. ZC05-01/UP05-08/ED05-15, which referenced two acreages, the 119.5-acre airport site and the 16.6-acre Project site (see Chapter 3: *Project Description*, for a description of the manner in which the Project site is divided into assessor's tax parcels). Mead & Hunt based their analysis on the 16.6-acre Project site and determined that the area encompassing the proposed building, playing fields and parking lot and playing fields is the area with the greatest potential use intensity, which is approximately 10-acres.

Using the parking methodology, the average usage intensity would be:

- 405 people maximum on site ((184 spaces + 86 overflow spaces) x 1.5 people per vehicle)
- 41 people per acre average for the site (405 people ÷ 10 acres)

The CBC methodology results in the following average usage intensity:

- 949 maximum occupancy under CBC assumptions —

239 people maximum in Dance Studio (11,960 sq. ft. ÷ 50 sq. ft. per occupant)

281 people maximum in Gymnastics Studio (14,040 sq. ft. ÷ 50 sq. ft. per occupant)

The Dance and Gymnastics Studios are assumed to be equivalent to the CBC's category of Exercise Room (50 sq. ft. per occupant)

234 people maximum in Mezzanine Area (15,000 sq. ft.; based on CBC numbers and counting seats on preliminary drawings)

195 people maximum in Soccer Field Areas (CBC number of 65 people x 3 fields). The soccer fields are assumed to be equivalent to the CBC's category of Skating Rink (50 people on the skating area plus 15 people on deck)

- 475 people maximum on site (949 people x 50 percent)
- 48 people per acre average for the site (475 people ÷ 10 acres)

The highest concentrations of people anticipated at the facility will be in the recreational building and, to a lesser extent, the outdoor soccer field. These uses are located primarily in Zone 5, with minor portions located in Zones 2 and 6. The warm-up field is located in Zone 2. See **Figure 10-2**.

Average Intensity

Based on the results calculated above, the average number of people per acre expected to be on the Project site at any given time is between 41 and 48 people per acre, well below the 100 people criterion for Zone 5. The warm-up area is likely not going to exceed the Zone 2 maximum of 40 people per acre standard. However, a sign at the entrance of the warm-up field indicating the maximum occupancy of the field may be prudent. The warm-up field is 55,500 square feet (1.3 acres) which translates to a maximum occupancy level of 50 people.

Single-Acre Intensity

The highest concentration of people in a *single-acre* area (209 ft. x 209 ft.) would be in the recreational building – which includes the dance and gymnastics studios, as well as a portion of the indoor soccer area. The footprint of the recreational building is 70,000 square feet (1.6 acres). Based on the higher of the two estimates provided above, approximately 216 people would be located within a *single-acre* (475 maximum people on site – 130 people outdoors ÷ 1.6 acres = 216 people per *single-acre*). Although this number slightly exceeds the *single-acre* criterion of 200 people, the actual occupancy level of the project is likely lower than this estimate because, as described above, the assumed minimum number of square feet per person the CBC uses to calculate the maximum occupancy level of a building is conservative due to the fact that most buildings are seldom occupied to the maximum levels. As discussed,

surveys of actual occupancy levels indicate that many uses are generally occupied at no more than 50 percent of maximum occupancy levels, even at the busiest times of the day.

Therefore, if the average of the two numbers provided under both methodologies is used, the *single-acre* total is about 200 people.

Therefore, the proposed Airport Sports Center appears to be consistent with the *average* and *single-acre* criteria. However, to enhance the protection of the occupants of the building, it is recommended that the Project incorporate risk-reduction building design features such as those described above under the heading “Intensity of Use.”

Highly Risk-Sensitive Uses

The Airport Sports Center will likely attract users and spectators which will include young children and the elderly. As noted earlier, these groups of people may find it difficult to move out of harm’s way if an aircraft accident should occur. Therefore, risk-reduction design features should be incorporated into the design of the facility (e.g., providing additional exits).

Because the estimated single-acre concentration of people on the Project site exceeds the *California Airport Land Use Planning Handbook’s* single-acre concentration threshold, and because the proposed Project’s likely attraction of small children and elderly makes it a “highly risk sensitive use”, the proposed Project will have a ***potentially significant*** impact associated with the intensity of use. Therefore, the following mitigation measure is recommended:

Recommended Mitigation Measure

MM Haz-1 **Risk-reduction design features.** In order to ensure that the proposed Project does not expose users to hazards associated with the operations at the San Rafael Airport, the Project Applicant shall:

- Limit the intensity of use to a maximum of 200 people per single acre or, at a minimum, incorporate the following risk-reduction building design features into the design of the recreational building:
 - Add one additional emergency exit beyond the number required by the California Building Code.
 - Provide enhanced fire sprinkler system (e.g., designed in a manner that the entire system would not be disabled by an accident affecting one area
- Add a sign at the entrance of the warm-up field indicating the maximum occupancy of the field is 50 people.

Resulting level of significance

Implementing the design recommendations contained in **MM Haz-1**, requiring the incorporation of risk-reduction design features into the site plan, will reduce any impacts associated with the adjacent airport operations to a level considered *less than significant*.

Hazards to Flight

Impact Haz-2 Hazards to Flight. Based on a review of the site plan, elements of the Project have heights that would extend into the navigable air-space above the San Rafael Airport, as defined by Part 77 of the Federal Aviation Regulations. Any object which penetrates this volume of airspace is considered to be an obstruction. This is considered a *potentially significant* impact.

The following obstruction analysis is based upon the January 2008 site plan and associated architectural drawings of the proposed Airport Sports Center prepared by L.A. Paul and Associates and provided by the Project Applicant (see **Figures 3-3** through **3-15**, Chapter 3: *Project Description*). The drawing shows the location and heights of proposed features relative to the airport's runway centerline. For the purpose of this obstruction analysis, the nearest and highest elevation of a proposed object is used to determine the potential penetration of that object. The results of this analysis are not intended to deem this project incompatible with airport operations, but rather to guide the final design of the project to ensure that future airspace penetrations do not occur after construction.

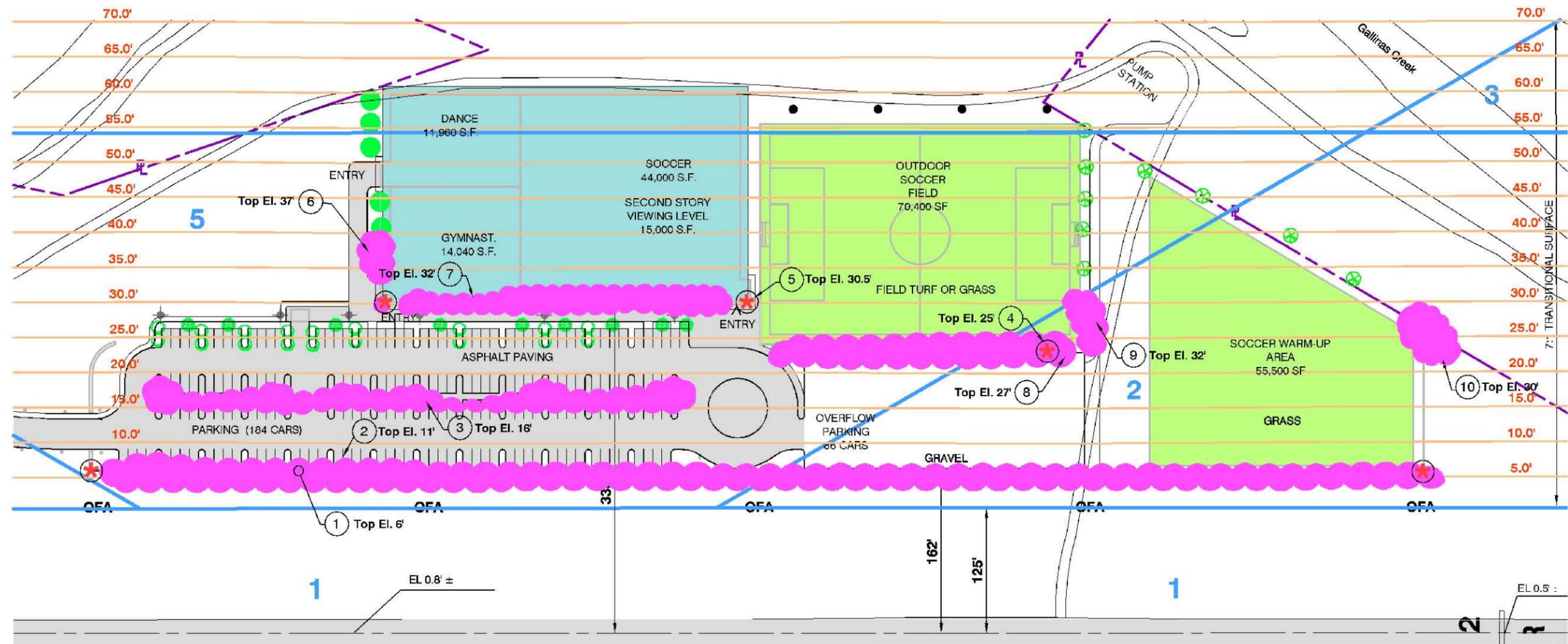
Based on preliminary designs supplied, insufficient vertical clearance is provided over the first row of parking stalls nearest to the airfield. As noted above, FAR Part 77 requires a vertical clearance of 10 feet over private roads and parking lots. To address this issue, this row of parking could be designed to accommodate only compact vehicles which are typically less than 10 feet in height. Another option is to add signs along the fence-line notifying drivers not to back-in their vehicles. This would allow the front end of a car or van (i.e., lowest part of vehicle) to be in the most critical height zone.

The fence (closest to the airfield) and the parapet of the recreational building penetrate the 7:1 transitional surface by 0.5 feet. The field lights for the outdoor soccer field penetrate the transitional surface by 0.7 to 1.7 feet. This range of penetration is due to the downward slope of the field toward Gallinas Creek to the east. Therefore, the greatest amount of penetration (1.7 feet) occurs on at the southwesterly end of the field nearest the recreational building. The parking lot lights are not penetrations, but they are just below the transitional surface and could potentially become an obstruction if the final grade elevation changes. Obstruction lights should be added to the critical features to make these objects more conspicuous to pilots. Five objects which should be obstruction lighted are identified in **Figure 10-2** with a red asterisk symbol.

The proposed landscaping plan includes plant species that would have a maturity height that would penetrate the 7:1 Transitional Surface. Tall trees would need to be maintained (i.e., trimmed) to ensure that they do not constitute an airspace obstruction, or be replaced with shorter varieties. Local growing conditions, however, may naturally limit the maximum height of the plant species.

The positions of cranes and other construction equipment can change from day to day during the construction of nearby facilities. Tall objects can become hazards to flight, particularly when visibility conditions are low due to weather or nighttime conditions. Construction cranes and other tall construction equipment should be lowered at the end of each day.

Figure 10-2 identifies elements of the proposed Project that could constitute an airspace obstruction under FAR Part 77.



LEGEND

- Landscaping Min-Max. Heights:**
- Sheoak 20'-35'
 - Ceanothus 12'-20'
 - ⊗ Toyon 15' - 25'
 - ⊗ Myrtle 10' - 30'
- Building
 - Pavement
 - Gravel
 - Playing Fields
 - +
 Pole Mounted Light
 - Field Light
 - ✱
 Obstruction Light
 - FAR Part 77 Obstruction Surfaces
 - Airport Property Line
 - Possible Obstruction (within 1 foot of 7:1 Part 77 airspace surface)
 - Safety Zones < 4,000' General Aviation Runway

- Sources:**
1. All elevations are in feet above mean sea level (MSL). Building designs, site plan, existing and future elevations and grades supplied by L.A. Paul & Associates, San Francisco. Runway end elevations were interpolated from ground shots in site plan. Elevation rounded to the nearest tenth of a foot.
 2. FAR Part 77 Obstruction Surfaces: Based on FAR Part 77, Subpart C, which establishes standards for determining obstructions to air navigation.
 3. Basic safety zones source: California Airport Land Use Planning Handbook (January 2002).

OBSTRUCTION DATA

OBSTRUCTION NUMBER	DESCRIPTION	MAXIMUM OBJECT HEIGHT	ESTIMATED GROUND ELEVATION	TOP ELEVATION	PART 77 SURFACE HEIGHT	PENETRATION	RECOMMENDED MITIGATION
1	Screened Fencing	5.0	1.5	6.5	6.0	0.5	*Obstruction Light
2	Parking Lot	10.0	1.0	11.0	6.4	4.6	Compact stalls
3	Parking Light	14.0	2.0	16.0	16.2	-0.2	None
4	Field Light	23.0	1.0 - 2.0	24.0 - 25.0	23.3	0.7 - 1.7	*Obstruction Light
5	Building Parapet	29.0	1.5	30.5	30.0	0.5	*Obstruction Light
6	Sheoak Trees	35.0	2.0	37.0	33.5	3.5	Local growing conditions may limit max height of plant species; trim if exceed part 77 surface height.
7	Myrtle Trees	30.0	2.0	32.0	29.0	3.0	
8	Toyon Trees	25.0	2.0	27.0	22.3	4.7	
9	Myrtle Trees	30.0	0.5	30.5	23.3	7.2	
10	Myrtle Trees	30.0	0.0	30.0	21.7	8.3	



Figure 10-2
Project Site Obstruction Data

Source: Mead & Hunt

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Other Hazards to Flight

Proposed outdoor parking and soccer field lights may be confusing to pilots or obstruct the pilot's ability to land at the airport. These lights should be shielded so that they do not create glare to pilots landing and departing the airport.

As described in the analysis above, elements of the Project have the potential to pose a flight hazard to incoming and outgoing aircraft using the San Rafael Airport. This is considered a *potentially significant* impact, and the following mitigation measures are recommended:

Mitigation Measures

- MM Haz-2** **Elimination of Flight Hazards.** In order to ensure that the proposed Project does not expose aircraft to hazards associated with the operations of the proposed Project, the Project Applicant shall:
- Limit height of proposed structures to assure clearance of the 7:1 Transitional Surface
 - Design the row of parking stalls nearest to airfield for compact vehicles and/or add signs along the fence-line notifying drivers not to back-in their vehicles
 - Add obstruction lights to the following features to make them more conspicuous to pilots:
 - Southwesterly and southeasterly corners of building
 - Southwesterly and southeasterly ends of the fence fronting the airfield
 - Most easterly field light along the southeastern edge of the outdoor soccer field
 - Tall trees should be trimmed to ensure that they do not constitute an airspace obstruction (or, alternatively, shorter species can be planted).
 - Outdoor parking lot lights and outdoor soccer field lights, in particular, should be shielded so that they do not aim above the horizon. Additionally, outdoor lights should be flight checked at night to ensure that they do not create glare during landings and takeoffs.
 - Construction cranes and other tall construction equipment should be lowered at the end of each day

- Prior to issuance of building permits or authorization to construct, the applicant should submit a *Notice of Proposed Construction or Alteration* (Form 7460-1) to the Federal Aviation Administration (FAA) and obtain from the FAA a determination of “*No Hazard to Air Navigation.*” Construction cranes and other tall construction equipment should be noted on the form.

Resulting level of significance

Implementing the measures recommended above in **MM Haz-2** will reduce any potential impacts of the Project on the San Rafael Airport to a level considered ***less than significant***.

HYDROLOGY AND WATER QUALITY

INTRODUCTION

This chapter of the EIR discusses the surface hydrology and water quality issues relative to the proposed Project. The analysis in this Chapter of the EIR is based upon the City of San Rafael *General Plan 2020*, City of San Rafael Zoning Ordinance and Maps, the City of San Rafael Municipal Code, site visits and inspections, discussions with the City Storm Water Management staff, technical reports prepared by licensed professional engineers. Technical reports upon which the following analysis is based include: *Hydrologic Analysis: San Rafael Airport Sports Complex*, prepared by Oberkamper & Associates, November 26, 2005, a letter report prepared by JCH & Associates, Inc, February 24, 2006, that addresses the potential for liquefaction of the levees during an earthquake, and a letter report prepared by Oberkamper & Associates, February 24, 2006, that provides an analysis of the potential for a levee breach at the time of a 100-year flood. All technical analyses are provided in **Appendix I** of this EIR.

SETTING

REGIONAL HYDROLOGY

The *General Plan 2020* identifies ten watersheds within the San Rafael Planning Area, which is defined as the area encompassing portions of San Rafael and San Pablo Bays, plus approximately 31 square miles of baylands, alluvial valleys, and uplands that drain to the western margins of San Pablo Bay. Of the ten watersheds, there are three principal watersheds — San Rafael Creek, Las Gallinas Creek, and Miller Creek. The Project site is located within the identified Las Gallinas Creek watershed. The site is situated among the lowest elevation zones of the Bay and alluvial valley depositional province, which is characterized by tidal marshes, diked and filled baylands, and broad areas of alluvial fan, floodplain, and deltaic deposits. Existing site elevation range is 0-3 feet MSL. Mean annual rainfall in the Planning Area ranges from 18 to 40 inches, most of which occurs during the

wet winter season. Major runoff events occur in response to prolonged storms that last from two to three days and are punctuated by short periods of intense nested rainfall.¹

SITE HYDROLOGY

The Project site as well as the overall airport site is relatively flat and surrounded by nine-foot tall levees on all sides. Storm water presently drains primarily through sheet flows across the site, into existing drainage swales to the north and south of the Project site and then is naturally conveyed to the existing pump house at the eastern end of the property. From the pump house, the overflow drainage is pumped into the North Fork of the Gallinas Creek. The Project includes an expansion of the stormwater drainage system that includes new catch basins in the paved areas. All drainage would then be directed to the existing vegetated drainage swales to the north and south of the proposed building

GROUNDWATER

Exploratory borings discovered groundwater at a depth of approximately 10 feet. Fluxuation in groundwater level typically occurs with seasonal rainfall and possible tidal action.

FLOODING

According to maps prepared by the Federal Emergency Management Agency (FEMA), the Project site is located within the 100-year floodplain (identified as A-1 on FEMA Maps; see **Figure 11-1**). It should be noted that the elevation values in this analysis are presented using the National Geodetic Vertical Datum of 1929 (NGVD 29) methodology. In many places in the United States, this methodology has been replaced by the North American Vertical Datum of 1988 (NAVD 88). In 2009, the City of San Rafael will also change to this methodology. CEQA does not permit analysis based on future conditions; analysis must be conducted on both physical and regulatory conditions existing at the time of the analysis. Because of this, elevation data presented in this chapter and throughout this EIR is presented using the NGVD 29 methodology.

The Project site is located in low-lying bayland areas with historical filling and diking, which along with encroachment by urban development upon the floodplains of the major streams (San Rafael, Las Gallinas, and Miller Creeks), have altered the hydrologic character of the watershed through increasing impervious surfaces and developing underground storm drain systems. Hydrologic impacts in these areas are compounded by the extent of tidal influence, which reduces the floodwater conveyance potential of the channels, lowers the flow velocities, and increases sedimentation of the channels, which further reduces channel capacity. Levees have been built to contain floodwaters during significant storms and/or high

¹ *San Rafael General Plan 2020, General Plan Update, Draft Environmental Impact Report*, City of San Rafael Community Development Department, February 2004.

tides; stormwater pumping stations have been installed to dewater floodplain areas that become inundated; and tidal channels and their tributary ditches must be periodically dredged.

The low-lying and coastal areas of the city are designated as flood hazard areas. These areas are subject to periodic inundation, which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare. These flood losses are typically caused by the construction of structures that are inadequately elevated, flood-proofed, or protected from flood damage. The City has adopted a flood hazard ordinance (Title 18 of the San Rafael Municipal Code) that seeks to restrict or prohibit land uses within the flood hazard areas that are dangerous to health, safety, and property because of water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities. The intent of the ordinance is to reduce flood hazards by controlling the alteration of natural floodplains, stream channels, and natural protective barriers that accommodate or channel flood waters. The ordinance regulates filling, grading, dredging, and other activities that could increase flood damage, and requires that uses vulnerable to floods be protected against flood damage at the time of their initial construction.

The Project site is bordered by the North and South Forks of Las Gallinas Creek. The borders with the creek include a privately maintained perimeter levee system that extends from the southwest corner of the site along the southern perimeter, wrapping back to the west along the northern border of the site. The land within the levees is situated at 0-3 feet elevation above mean sea level (MSL) and the levees are 9 feet above MSL. Since the Project site ranges in elevation from 0-3 feet above MSL, the site is exposed to 100-year tidal flooding at an elevation of 6 feet MSL. In terms of storm event flow rates, the estimated peak 100-year flow from the existing 16.6-acre site is 71.23 cubic feet per second (cfs).²

² *Hydrologic Analysis, San Rafael Airport Sports Complex*, Oberkamper & Associates Civil Engineers, Inc., November 26, 2005.

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WATER QUALITY AND RUNOFF

Urban Runoff Characteristics

The most common categories of stormwater pollutants are described below. Receiving waters can assimilate some quantity of various runoff constituents. However, there are thresholds beyond which the measured constituent becomes a pollutant and results in an undesirable impact.

Sediment. Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is typically the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy (be turbid). The fine sediment particles also act as a vehicle to transport other pollutants, including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development; another major source is stream bank erosion, which may be accelerated by increases in peak flow rates and volumes of runoff due to urbanization.

Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes or other nonmoving water bodies. The orthophosphorous form of phosphorus is a readily available nutrient for plant growth.

The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching groundwater. Orthophosphate from automobile emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with large impervious areas. Other problems resulting from excess nutrients are surface algal scums, water discolorations, odors, toxic releases, and overgrowth of plants. Common measures of nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals. Trace metals are primarily of concern because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. A shorter duration of exposure to a trace metal reduces its toxicity in the aquatic environment. The toxicity of trace metals in runoff also varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases. Metals commonly found in urban runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban runoff is

attached to sediment, and this effectively reduces the level that is immediately available for biological uptake and subsequent bioaccumulation; metals attached to sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically have a short duration, which reduces the amount of exposure and its toxicity in the aquatic environment.

Oxygen-Demanding Substances. Aquatic life is dependent on the dissolved oxygen (DO) in water. When organic matter is consumed by microorganisms, then DO is also consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substances in lakes and streams. The biochemical oxygen demand (BOD) of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO can result when the rate of oxygen-demanding material exceeds the rate of oxygen replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as BOD, chemical oxygen demand (COD), oils and greases, and TOC.

Bacteria. Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation, almost without exception. Studies have found that total coliform bacteria counts exceed U.S. Environmental Protection Agency (EPA) water quality criteria at almost every site examined and almost every time has rained. The coliform bacteria that are detected may not be a health risk per se, but are often associated with human pathogens.

Oil and Grease. Oil and grease contain a wide variety of hydrocarbons, some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles onto impervious surfaces. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbon export, although illegal disposal of waste oil into storm water can be a local problem.

Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and are occasionally detected in urban runoff. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceed the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in stormwater include phthalate (plasticizer compound), phenols and creosols (wood preservatives), pesticides and herbicides, oils and greases, and metals.

Standard parameters can assess the quality of storm water and provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its

characteristics determine the degree of availability as a pollutant in surface runoff. In an urbanized area, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a variety of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface water or groundwater.

On-Site Runoff Quality

No site-specific measured data regarding stormwater runoff quality exist for the Project site. However, the expected pollutants in the existing-condition stormwater runoff could potentially include sediment, nutrients, oxygen-demanding substances, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses. Suspended sediments constitute the largest mass of pollutant loadings to receiving waters from urban areas. Construction is a major source of sediment erosion. Petroleum hydrocarbons result mostly from automobile sources. Nutrient and bacterial sources include garden fertilizers, leaves, grass clippings, pet wastes, and faulty septic tanks.³

San Pablo Bay Water Quality

The State Water Resources Control Board (SWRCB) is required by federal Clean Water Act (CWA) section 303(d) and Title 40, Code of Federal Regulations section 130.7 to develop a list of water quality limited segments (section 303 [dl list]). Water bodies shown to not meet water quality standards, even after implementation of certain technology-based water quality controls, are placed on the section 303(d) list. In general, water bodies are listed due to deleterious impacts from a pollutant or pollutants, and delisted when evidence reveals that such impacts have ceased or never existed. Waters placed on the section 303(d) list are subject to development of Total Maximum Daily Loads (TMDLs), which define how much of a pollutant a water body can tolerate and meet water quality standards.⁴

The San Pablo Bay is considered an impaired water body for a number of pollutants on the section 303(d) list. **Table 11-1**, *List of Pollutants for San Pablo Bay*, provides the 2003 update to the section 303(d) List approved by the EPA for the San Pablo Bay.

³ State Water Resources Control Board Website, www.waterboards.ca.gov/nps/docs/guidance/urbanmms.pdf, accessed January 31, 2008.

⁴ TMDLs account for all the sources of a pollutant, including runoff from homes, agriculture, and streets or highways; discharges from wastewater treatment plants; “toxic hot spots”; and deposits from the air. In addition to accounting for past and current activities, TMDLs may consider projected growth that could increase pollutant levels. The San Francisco RWQCB is developing more than 30 TMDL projects to address more than 160 listings for water bodies impaired by specific pollutants.

TABLE 11-1 LIST OF POLLUTANTS FOR SAN PABLO BAY

Pollutant	Potential Sources	TMDL Priority	TMDL Completion
Chlordane	Non-point source	Low	
<i>This listing was made by EPA.</i>			
<i>Chlordane is a manufactured chemical that was used as a pesticide in the U.S. from 1948 to 1988. Technical chlordane is not a single chemical, but is actually a mixture of pure chlordane mixed with many related chemicals. It doesn't occur naturally in the environment. It is a thick liquid whose color ranges from colorless to amber. Chlordane has a mild, irritating smell.</i>			
<i>Some of its trade names are Octachlor and Velsicol 1068. Until 1983, chlordane was used as a pesticide on crops like corn and citrus and on home lawns and gardens.</i>			
<i>Because of concern about damage to the environment and harm to human health, the EPA banned all uses of chlordane in 1983 except to control termites. In 1988, EPA banned all uses.</i>			
DDT	Non-point source	Low	
<i>This listing was made by EPA.</i>			
<i>DDT (dichlorodiphenyltrichloroethane) is a pesticide once widely used to control insects in agriculture and insects that carry diseases such as malaria. DDT is a white, crystalline solid with no odor or taste. Its use in the U.S. was banned in 1972 because of damage to wildlife, but is still used in some countries.</i>			
Diazinon	Non-point source	Low	In process
<i>Diazinon levels cause water column toxicity. Two patterns: pulses through river/est systems linked to agricultural application in late winter and pulse from residential land use areas linked to homeowner pesticide use in late spring, early summer. Chlorpyrifos may also be the cause of toxicity; more data needed, however.</i>			
<i>Diazinon is the common name of an organophosphorus insecticide used to control pest insects in soil, on ornamental plants, and on fruit and vegetable field crops. It is also used to control household pests such as flies, fleas, and cockroaches. This chemical is manufactured and does not occur naturally in the environment.</i>			
<i>The pure chemical is a colorless and practically odorless oil. Preparations used in agriculture and by exterminators contain 85-90% diazinon and appear as a pale to dark-brown liquid. Diazinon preparations available for home and garden use contain 1-5% diazinon in a liquid or as solid granules.</i>			
<i>Most of the diazinon used is in liquid form, but it is possible to be exposed to the chemical in a solid form. Diazinon does not burn easily and does not dissolve easily in water.</i>			
<i>On December 5, 2000, EPA released its revised risk assessment and announced an agreement with registrants to phase out/eliminate certain uses of the organophosphate pesticide diazinon. EPA is soliciting public comments on further risk management options for this widely-used pesticide.</i>			
Dieldrin	Non-point source	Low	
<i>This listing was made by EPA.</i>			
<i>Dieldrin is an insecticide. Pure dieldrin is a white powder with a mild chemical odor. The less pure commercial</i>			

powders have a tan color. It does not occur naturally in the environment.

From the 1950s until 1970, dieldrin was widely used in pesticides for crops like corn and cotton. Because of concerns about damage to the environment and potentially to human health, EPA banned all uses of dieldrin in 1974, except to control termites. In 1987, EPA banned all uses.

Dioxin Compounds	Atmospheric deposition	Low
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The specific compounds are 2,3,7,8-TCDD, 1,2,3,7,8-TCDF, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDD, and OCDD. This listing was made by EPA.

Dioxin and dioxin-like compounds are structurally related groups of chemicals from the family of halogenated aromatic hydrocarbons. Depending on the number of chlorine-substituted positions. There are several congeners in each group. The most toxic and the most studied congener is TCDD.

Exotic Species	Ballast water	Medium
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Disrupt natural benthos; change pollutant availability in food chain; disrupt food availability to native species.

Furan Compounds	Atmospheric deposition	Low
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The specific compounds are 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, and OCDF. This listing was made by EPA.

Similar to dioxin, furans include over 200 compounds with various numbers of attached chlorine molecules, from 0 to 8. In dealing with mixtures of dioxins and furans, a system has been developed to weigh concentrations of isomers and congeners with factors that relate their toxicity to that of 2,3,7,8-TCDD, generating a "TCDD equivalency factor (TEF)."

Mercury	Municipal point source Resource extraction Atmospheric deposition Natural sources Non-point source	High	In process
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Current data indicate fish consumption and wildlife consumption impacted uses: health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic: gold mining sediments and local mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources.

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or salts, which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

Nickel	Source unknown	Low
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This listing was made by EPA.

Nickel is a very abundant natural element. Pure nickel is a hard, silvery-white metal. Nickel can be combined with other metals, such as iron, copper, chromium, and zinc, to form alloys. These alloys are used to make coins, jewelry, and items such as valves and heat exchangers. Most nickel is used to make stainless steel. Nickel can combine with other elements such as chlorine, sulfur, and oxygen to form nickel compounds. Many nickel compounds dissolve fairly easy in water and have a green color. Nickel compounds are used for nickel plating, to color ceramics, to make some batteries, and as substances known as catalysts that increase the rate of chemical reactions.

Nickel is found in all soil and is emitted from volcanoes. Nickel is also found in meteorites and on the ocean floor. Nickel and its compounds have no characteristic odor or taste.

PCBs	Unknown non-point source	High	In process
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This listing covers non dioxin-like PCBs. Interim health advisory for fish; uncertainty regarding water column concentration data.

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U. S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors and old microscope and hydraulic oils.

PCBs (dioxin-like)	Unknown non-point source	Low
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The specific dioxin like compounds are 3,4,4,5-TOB (81), 3,3,3,3-TCB (77), 3,3,4,4,5-PeCB (126), 3,3,4,4,4,4-HxCB (169), 2,3,3,4,4-PeCB (105), 2,3,4,4,5-PeCB (114), 2,3,4,4,5-PeCB (118), 2,3,4,45-PeCB (123), 2,3,3,4,4,5-HxCB (156), 2,3,3,4,4,5-HxCB (157), 2,3,4,4,5,5,-HxCB (167), 2,3,3,4,4,5,5-HpCB (189). This listing was made by EPA.

Selenium	Industrial point sources Agriculture Natural sources Exotic species	Low
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Affected use is one branch of the food chain; most sensitive indicator is hatchability in nesting diving birds, significant contributions from oil refineries (control program in place) and agriculture (carried downstream by rivers); exotic species may have made food chain more susceptible to accumulation of selenium; health consumption advisory in effect for scaup and scoter (diving ducks); low TMDL priority because Individual Control Strategy in place.

Selenium is a naturally occurring mineral element that is distributed widely in nature in most rocks and soils. In its pure form, it exists as metallic gray to black hexagonal crystals, but in nature it is usually combined with sulfide or with silver, copper, lead, and nickel minerals. Most processed selenium is used in the electronics industry, but it is also used: as a nutritional supplement; in the glass industry; as a component of pigments in plastics, paints, enamels, inks, and rubber; in the preparation of pharmaceuticals; as a nutritional feed additive for poultry and livestock; in pesticide formulations; in rubber production; as an ingredient in antidandruff shampoos; and as a constituent of fungicides. Radioactive selenium is used in diagnostic medicine.

Source: 2003 CWA Section 303(d) List of Water Quality Limited Segments, San Francisco RWQCB, and Agency of Toxic Substances and Disease Registry (ATSDR) website, U.S. Department of Health and Human Services (<http://www.atsdr.cdc.gov/>).

REGULATORY SETTING

The proposed Project must be constructed in accordance with several regulatory programs, laws, and regulations that aim to protect surface water resources. In some cases, federal laws are administered and enforced by state and local government. In other cases, state and local regulations in California are stricter than those imposed by federal law. This section summarizes relevant regulatory programs, laws, and regulations with respect to hydrology and water quality and how they relate to the proposed Project.

FEDERAL LAWS AND REGULATIONS

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA)—a former independent agency that became part of the new Department of Homeland Security in March 2003—is tasked with responding to, planning for, recovering from and mitigating against disasters. Formed in 1979 to merge many of the separate disaster-related responsibilities of the federal government into one agency, FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters and providing disaster assistance to States, communities and individuals. The Federal Insurance and Mitigation Administration (FIMA) within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards. Established in 1968 with the passage of the National Flood Insurance Act, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. The City has taken part in the NRIP since 1984.

Clean Water Act

The Clean Water Act (CWA) was enacted by Congress in 1972 and amended several times since inception. It is the primary federal law regulating water quality in the United States, and forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribed the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all waters of the United States. Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At

the federal level, the CWA is administered by the U.S. Environmental Protection Agency (EPA). At the state and regional level, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). The State of California has developed a number of water quality laws, rules, and regulations, in part to assist in the implementation of the CWA and related federally mandated water quality requirements. In many cases, the federal requirements set minimum standards and policies and the laws, rules, and regulations adopted by the State and Regional Boards exceed the federal requirements.

STATE LAWS AND REGULATIONS

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act establishes the SWRCB and the RWQCB as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting, implementing, and enforcing water quality control plans (Basin Plans), which set forth the state's water quality standards (i.e. beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses. The NPDES permit must be consistent with the Basin Plan for the site region.

NPDES Permit Requirements

In 1972 the Clean Water Act was amended to state that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p) which establishes a framework for regulating municipal and industrial non-point-source storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (EPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 expand the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one (1) acre. Surface grading and excavation of the Project site will exceed one acre; therefore, the Project will be regulated pursuant to the NPDES program and it will be the Applicant's responsibility to obtain coverage under the General Permit prior to commencement of construction activities.

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all storm water discharges associated

with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (Caltrans). The General Permit requires all dischargers where construction activity disturbs greater than one acre to:

- 1) Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.
- 2) Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.
- 3) Perform inspections of all BMPs.

This General Permit is implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs).

To obtain coverage under the General Permit, the Applicant (landowner) must file an NOI with a vicinity map and the appropriate fee with the SWRCB. In addition, coverage under this permit does not occur until the Applicant develops an adequate SWPPP for the Project. Section A of the General Permit outlines the required contents of a SWPPP. The entity responsible for the construction activity shall file the NOI and submit the filing fee and shall be responsible for development of the SWPPP, all of which must occur prior to commencement of construction activities.

The NOI must be sent to the following address:

State Water Resources Control Board
Division of Water Quality
Storm Water Permit Unit
1001 I Street, 15th floor
Sacramento, CA 95814
(916) 341-5455

Types of Construction Activity Covered by the General Permit

Construction activity subject to this General Permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area. Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity. Construction activity does not include routine maintenance to maintain original line

and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. Project Applicants (landowners) should confirm with the local RWQCB whether or not a particular routine maintenance activity is subject to this General Permit.

LOCAL PROGRAMS AND REGULATIONS

San Francisco Bay Water Quality Control Plan (Basin Plan)

The Municipal Storm Water Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the RWQCBs adopted NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire. As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations.

The City of San Rafael is a MS4 permittee. As a Phase II implementing City, the City of San Rafael should enforce development of a SWMP containing pre and post construction BMPs.

Marin County Flood Control and Water Conservation District

The Marin County Flood Control and Water Conservation District was formed in 1955 by an Act of the State Legislature found in Chapter 68 of the State Water Code. The Board of Supervisors sits as Board of the District and the District is staffed by the Department of Public Works. The boundaries of the District are contiguous with those of the County of Marin and eight “zones” have been established to address specific watershed flooding problems. Each zone has an “Advisory Board” of 5 or 7 residents, which are appointed by the Board of Supervisors. These Boards review Zone budgets and master plans and advise the Board on these matters.

The District maintains Real Time Precipitation and Stream Gauges, publishes Creek Rating Tables (Stage - Discharge) and oversees the MCSTOPPP and FEMA Flood Insurance programs.

Marin County Stormwater Pollution Prevention Program

The municipalities of Marin County have been addressing stormwater pollution prevention since the early to mid 1990s. Marin municipalities pursued a countywide program to comply with the San Francisco Bay Water Quality Control Plan (Basin Plan) requirements for a baseline stormwater program. By 1995, the Marin County Stormwater Pollution Prevention Program, or MCSTOPPP, was formalized and began work on a strategy that integrates federal- and State-mandated municipal stormwater programs with locally popular efforts to preserve and enhance creek and wetland habitat.⁵ As part of this ongoing strategy, an updated stormwater management plan (Action Plan 2010: Fiscal Years 2005-2006 through 2009-2010) was prepared by MCSTOPPP in March 2005 that meets the recent requirements of the SWRCB's General Permit for the Discharge of Storm Water from Small Municipal Separate Storm Sewer Systems (Small MS4s) under Water Quality Order No. 2003-00005-DWQ (commonly referred to as the Phase II General Permit). In general, the activities described in this Action Plan 2010 are based on EPA Phase II stormwater regulations as described in the Phase II General Permit, precedents set by other countywide stormwater programs in the Bay Area, and the results of discussions with RWQCB staff.

MCSTOPPP conducts the following activities that benefit the City: administrative, budgeting, and planning activities; municipal activities to care for local creeks; public outreach and training activities for land development processes related to stormwater BMPs and water quality issues; commercial and industrial outreach, inspection and enforcement activities; and residential and school-based education activities.

Each municipality within the program, including the City, has adopted a stormwater ordinance to control discharges to its municipal storm drain system. The City's stormwater ordinance is intended to: (a) minimize discharges other than stormwater runoff to storm drains or watercourses; (b) control the discharge to storm drains or watercourses from spills, dumping, or disposal of materials other than rainwater; and (c) reduce pollutants in stormwater discharges to the maximum extent practicable.

⁵ MCSTOPPP is composed of the County of Marin, the Cities of Belvedere, Larkspur, Mill Valley, Novato, San Rafael, and Sausalito, and the Towns of Corte Madera, Fairfax, Ross, San Anselmo, and Tiburon.

City of San Rafael Regulations

San Rafael General Plan 2020

The San Rafael *General Plan 2020* contains goals and policies regarding hydrology and water quality impacts applicable to a proposed Project, as cited in the following text. Refer to Table 3.1-2, *General Plan 2020* Policy, for an analysis of consistency with these goals and policies.

Goal 28 (A Safe Community): *It is the goal of San Rafael, as the first priority of city government, to provide excellent fire, public safety and paramedic services and to be prepared in the case of disaster or emergency.*

- Policy S-17. Flood Protection of New Development:** Design new development within the Bay mud areas to minimum floor elevation that provides protection from potential impacts of flooding during the “100-year” flood. The final floor elevation (elevation of the first floor at completion of construction) shall account for the ultimate settlement of the site due to consolidation of the Bay mud from existing and new loads, taking into account soils conditions and the type of structure proposed. Design for settlement over a 50-year period is typically considered sufficient
- Policy S-18. Storm Drainage Improvements:** Require new development to improve local storm drainage facilities to accommodate cite runoff anticipated from a 100—year’ storm.
- Policy S-20. Levee Upgrading:** When waterfront properties are developed or redeveloped, require levee upgrading, as appropriate, based on anticipated high tide and flood conditions, maintain an appropriate levee height.
- Policy S-21. Rise in Sea Level:** Coordinate a response to potential rise in sea level with local, regional, state, and federal agencies. Prior to levee heightening for flood control purposes, contact the Intergovernmental Panel on Climate Change (IPCC) regarding the most current estimates of sea level rise.
- Policy S-22. Erosion:** Require appropriate control measures in areas susceptible to erosion, in conjunction with proposed development. Erosion control measures and management practices should conform to the most recent editions of the Regional Water Quality Control Board’s Erosion and Sediment Control Field Manual and the Association of Bay Area Governments’ Manual of Standards for Erosion and Sediment Control or equivalent.

Policy S-24. Creeks and Drainageways. Seek to retain creek channels in their natural state in order to prevent undue erosion of creek banks. Protect creekside habitat and provide maintenance access along creeks where appropriate.

Policy S-25. Regional Water Quality Control Board (R WQCB) Requirements: Continue to work through the Marin County Stormwater Pollution Prevention Program to implement appropriate Watershed Management plans as dictated in the R WQCB general National Pollutant Discharge Elimination System (NPDES) permit for Marin County and the local storm water plan.

***Goal 33 (Clean Air and Waterways):** It is the goal of San Rafael to have the residents of San Rafael breathe clean air and have clean waterways. It is desirable that San Rafael meets all ambient air quality standards and that San Rafael's waterways are clean and healthy.*

Policy AW-8. Reduce Pollution from Urban Runoff: Address non-point source pollution and protect receiving waters from pollutants discharged to the storm drain system by requiring Best Management Practices.

- Support alternatives to impervious surfaces in new development, redevelopment, or public improvement projects to reduce urban runoff into storm drain system, creeks, and the Bay.
- Require that site designs work with the natural topography and drainages to the extent practicable to reduce the amount of grading necessary and limit disturbance to natural water bodies and natural drainage systems.

City of San Rafael Municipal Code Title 18: Protection of Flood Hazard Areas

The California state Legislature grants local government units the authority to adopt regulations designed to promote the public health, safety and general welfare of its citizenry. Title 18 of the City's Municipal Code was adopted by the City of San Rafael to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions. Title 18 applies to all areas of special flood hazards within the jurisdiction of the City. According to maps prepared by the Federal Emergency Management Agency (FEMA), the Project site is located within the 100-year floodplain (identified as A-1 on FEMA Maps; see **Figure 11-1**). Therefore, the Project site is subject to the provisions of Title 18 of the City Municipal Code.

IMPACT ANALYSIS

STANDARDS OF SIGNIFICANCE

The following thresholds for measuring a project's hydrology impacts are based upon CEQA Guidelines thresholds:

- Would the Project violate any water quality standards or waste discharge requirements?
- Would the Project 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 (e.g., 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)?
- Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- Would the Project 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, which would result in flooding on- or off-site?
- Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- Would the Project otherwise substantially degrade water quality?
- Would the Project 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?
- Would the Project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?
- Would the Project 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?
- Would the Project cause inundation by seiche, tsunami, or mudflow?

WATER QUALITY STANDARDS AND WASTE DISCHARGE REQUIREMENTS

Impact Hyd-1 Project construction and operational activities may result in increased pollution of receiving waters, including the North Fork of Gallinas Creek and San Rafael Bay. This impact is considered *potentially significant*.

Under applicable provisions of the Clean Water Act, and subject to review by the Regional Water Quality Control board, the Project is required to maintain consistency with local and state water quality and waste discharge requirements. The Project does not propose any on-site wells or septic systems. Water service would be provided by Marin Municipal Water District and the sewage service would be provided by the Las Gallinas Valley Sanitary District. Recycled water is also available via the Las Gallinas Sanitation District; however, the Applicant has not indicated that recycled water will be utilized.

Construction-Related Impacts

Construction-related erosion could result from grading activities, and erosion could increase sedimentation in receiving waters. Sedimentation can reduce water quality because sediment can carry nitrogen, phosphorus, and trace metals. Sediment can also accumulate at the entrance of downstream storm drain system inlets and reduce their capacity.

As shown in **Figure 3-15, *Grading and Drainage Plan***, planned earthwork and grading activities would occur across most of the site. Grading for the Project would require a cut quantity of 3,000 cubic yards and a fill quantity of 35,000 yards. As such, the proposed Project would present a threat of soil erosion from soil disturbance by importing large amounts of fill material and subjecting unpaved and un-vegetated areas to the erosional forces of runoff.

Because the Project would disturb an area exceeding one acre of land, the Project Applicant must obtain coverage under the General Permit by filing a Notice of Intent (NOI) with the SWRCB's Division of Water Quality. The filing must describe erosion control and storm water treatment measures to be implemented during and following construction and provide a schedule for monitoring performance. These BMPs would serve to control point- and non-point-source pollutants in storm water and constitute the Project's SWPPP for construction activities. While the SWPPP would include several of the same components as the Erosion Control Plan (ECP), the SWPPP would also include BMPs for preventing the discharge of other non-point-source pollutants besides sediment (such as paint, concrete, etc.) to downstream waters.

Operation-Related Impacts

Sedimentation would not be considered a significant issue during post-construction and operation of the Project because most of the site would be paved or landscaped, which would stabilize soils for the long term. As discussed in the Setting section of this chapter, storm

water currently drains primarily via sheet flow across the site to two existing drainage swales located to the north and south of the Project site. From there, water is naturally conveyed to the existing pump house at the eastern end of the site, where it is finally pumped into the North Fork of Gallinas Creek. The Project would include installation of new storm drainage catchment basin beneath the parking area. Runoff would then be conveyed from the catch basin to the existing swales via new swales, where it would naturally flow to the pump house and be pumped into the creek as is currently done (see **Figure 3-15, Grading and Drainage Plan**). The Applicant also indicates that interceptors would be used in the asphalt parking lot to capture and filter contaminants that may be discharged by vehicles; however these features are not depicted on the Project grading and drainage plan. The final site plan will be required to show all features that would clean site waters in accordance with RWQCB and MCSTOPPP standards (see **MM Hyd-1d**).

After construction and during the life of the Project, non-point-source pollutants would be the primary contributors to potential water quality degradation. Non-point-source pollutants are washed by rainwater from rooftops, landscape areas and parking areas into the on-site drainage system and then pumped into the creek and ultimately the bay. Project implementation is likely to contribute non-point-source pollutants into the drainage system, such as maintenance and cleaning supplies; landscape materials and products (pesticides, herbicides, and fertilizers); oil and grease and heavy metals from automobiles; and petroleum hydrocarbons from fuels. Pollutant concentrations in runoff from a site depend on numerous factors, including:

- Land use conditions;
- implementation of Best Management Practices (BMPs);
- site drainage conditions;
- the intensity and duration of rainfall; and
- the climatic conditions preceding the rainfall event.

Non-point-source pollutants in runoff that reaches San Rafael Bay or wetland areas would result in a *potentially significant* impact. Of particular concern are those non-point source pollutants shown in **Table 11-1, List of Pollutants for San Pablo Bay**.

Recommended Mitigation Measures

Project construction and operation activities have the potential to violate water quality standards or waste discharge requirements; therefore, the following mitigation measure is recommended.

MM Hyd-1a **Erosion Control Plan.** Prior to issuance of a grading permit, the Project Applicant shall prepare and submit a detailed erosion control plan (ECP) and narrative to the Stormwater Program Manager of the City of San Rafael for review and approval. The ECP shall be designed to mitigate erosion and sedimentation impacts during construction. At a minimum, the ECP and written narrative shall include the following:

- A proposed schedule of grading activities, monitoring, and infrastructure milestones in chronological format;
- Identification of critical areas of high erodibility potential and/or unstable slopes; contour and spot elevations indicating runoff patterns before and after grading;
- Identification of erosion control measures on slopes, lots, and streets, based on recommendations contained in the *Erosion and Sediment Control Field Manual* published by the San Francisco Regional Water Quality Control Board (RWQCB), the Association of Bay Area Governments' *Manual of Standards for Erosion and Sediment Control*, or equivalent document, as required by the City of San Rafael *General Plan 2020 Policy S-19 (Erosion)*;
- Soil stabilization techniques (such as short-term biodegradable erosion control blankets and hydroseeding) to be utilized; and
- The post-construction inspection of all drainage facilities for accumulated sediment, and the cleaning of these drainage structures of debris and sediment.
- The first 3/4 –inch of runoff from the first 1-inch of rainfall must be treated.

MM Hyd-1b **NPDES Permit.** Prior to issuance of a grading or building permit, whichever occurs first, and following the preparation of Project site grading plan, the Applicant shall comply with NPDES General Construction Activities Storm Water Permit Requirements established by the Clean Water Act (CWA), including the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall identify specific types and sources of stormwater pollutants, determine the location and nature of potential impacts, and specify appropriate control measures to eliminate any potentially significant impacts on receiving water quality from stormwater runoff. In addition to complying with the standards established by the CWA for preparation of a SWPPP, the SWPPP shall

also comply with the directions for preparing a SWPPP contained in the latest edition of the *Guidelines for Construction Projects*, published by the San Francisco Regional Water Quality Board (RWQCB). Furthermore, in conjunction with the Marin County Stormwater Pollution Prevention Program (MCSTOPPP), and as required by the City's *General Plan 2020* Policy S-21 (RWQCB Requirements), the Project Applicant shall consult with City staff and implement recommended measures that would reduce pollutants in stormwater discharges from the site to the maximum extent practicable.

- MM Hyd-1c** **Storm Water Pollution Prevention Plan (SWPPP).** Prior to issuance of a grading or building permit, whichever occurs first, and following the preparation of the Project site grading plan, the Project Applicant shall submit to the City Engineer for review a draft copy of the Notice of Intent (NOI) and SWPPP. After approval by the City, the NOI and SWPPP shall be sent to the State Water Resources Control Board. (The SWPPP follows the preparation of the Project site grading plan because Best Management Practices (BMPs) for erosion control are selected to meet the specific site requirements.)
- MM Hyd-1d** **Storm Water Management Plan (SWMP).** Consistent with the requirements of the City of San Rafael NPDES Permit, prior to issuance of a grading or building permit, whichever comes first, the Project engineer shall prepare a post-construction Storm Water Management Plan (SWMP) and incorporate into the final site plan features that would clean site waters in accordance to RWQCB and MCSTOPPP standards before they enter San Rafael Bay. Features that could be used to clean site waters include, but are not limited to, bioswales, filters inserted into the site drainage inlets to filter runoff, and landscaped and unimproved areas that would act as bio-swales to allow microorganisms in the soil to clean and filter site waters before release into Gallinas Creek. In addition, prior to preparation of the SWPPP, the Marin/Sonoma Mosquito & Vector Control District shall be consulted to ensure that the measures do not have the potential to promote mosquito breeding.
- MM Hyd-1e** **Drainage Swales.** Where grassed swales are to be used to filter pollutants from runoff, they shall consist of a dense, uniform growth of fine-stemmed herbaceous plants best suited for filtering pollutants and tolerant to the water, climatological, and soil conditions of the development area. In addition, the swale design shall include, but not be limited, to the following:

- Design methods for increasing detention, infiltration, and uptake by wetland-typed plants.
- A flow path adequate to provide for efficient pollutant removal in accordance with the standards of the RWQCB and MCSTOPPP.

The Project Applicant shall submit a final site plan, design, construction details, and maintenance program for the proposed grassed swale(s) to the City's Engineering Services Manager for review and approval prior to issuance of a grading or building permit, whichever occurs first.

MM Hyd-1f Maintenance of Paved Areas. After Project completion, the Project Applicant or successor shall properly maintain parking lots and other common paved areas, by sweeping or other appropriate means, to prevent the majority of litter from washing into storm drains. Parking lots and paved areas shall be swept once per week. Should the Project Applicant or successor fail to maintain this schedule, the City shall sweep the parking lots and paved areas at the expense of the Project Applicant or successor. This mitigation measure shall also be included in the Owner's Association CC&R's.

Resulting level of significance.

Implementation of **MMs Hyd-1a** through **Hyd-1c** above would reduce construction-related water quality impacts to *less than significant* levels by preventing construction-related erosion and reducing pollutants in stormwater discharges from the site to the maximum extent practicable.

The implementation of **MMs Hyd-1d**, **Hyd-1e**, and **Hyd-1f** would reduce operation-related water quality impacts on the Bay from non-point-source pollutants to *less than significant* levels because these measures would result in the construction of both structural and non-structural devices that filter or treat pollutants in stormwater. Implementation of BMPs associated with these mitigation measures (such as bioswales and drain inlet filters) may result in a beneficial impact to water quality, as runoff from the proposed Project would be treated and would adhere to all applicable regulations and BMP's.

GROUNDWATER SUPPLIES AND RECHARGE

During exploratory borings, ground water was encountered at a depth of approximately 10 feet. Fluctuation in the ground water level typically occurs with seasonal rainfall and possible tidal action. The proposed Project does not rely on groundwater resources for the supply of water; but rather the Marin Municipal Water District would provide water service to the site under an extension to the existing water service agreement. Except for the standard use of pilings to mitigate the expansive soils conditions, excavation will not impact groundwater in

perched or aquifer conditions. The Project site's ability to recharge any underlying aquifer may be slightly impacted, because a portion of the site will be covered with structures and asphalt. However, given the minimal amount of impervious surface in relation of the overall size of the site, there would be adequate opportunity for recharging of the aquifer. Based on the discussion above, a *less than significant* impact would occur.

ALTERATION OF DRAINAGE PATTERN RESULTING IN EROSION OR SILTATION

The Project site as well as the overall airport site are relatively flat and surrounded by nine-foot tall levees on all sides. Storm water presently drains primarily through sheet flows across the Project site, into existing drainage swales to the north and south, and then is naturally conveyed to the existing pump house at the eastern end of the property. From the pump house, the overflow drainage is pumped into the North Fork of the Gallinas Creek. The Project includes an expansion of the stormwater drainage system that includes new catch basins in the paved areas. All drainage would then be directed to the existing drainage swales to the north and south of the proposed building, and then pumped into the North Fork of Gallinas Creek as it is done today.

Project construction would involve vegetation removal, grading earth excavation of the proposed sports facility. These activities would slightly modify the existing on-site drainage pattern and could increase the potential for erosion and/or siltation. However, the discussion of water quality standards and waste discharge requirements provided above includes **MMs Hyd-1a, Hyd-1b, and Hyd-1c**, which require, the preparation of an erosion control plan to be reviewed and approved by the City's Stormwater Program Manager, compliance with NPDES General Construction Activities Storm Water Permit Requirements established by the Clean Water Act (CWA), and the preparation of a SWPPP, which requires the incorporation of BMPs for erosion control selected to meet the specific requirements of the Project site. Implementation of these mitigation measures would ensure that the temporary construction impacts would be *less than significant*.

The hydrology study prepared by Oberkamper & Associates determined that the runoff coefficient of the Project site would increase from 0.56 to 0.58 once the Project is constructed; however, this was not considered a significant increase (see further analysis in the flooding discussion provided in the next section). The discussion of water quality standards and waste discharge requirements provided above includes **MMs Hyd-1d, Hyd-1e, and Hyd-1f**, which also require the implementation of BMPs. Implementation of these measures will ensure that post-construction runoff from Project will be adequately filtered of siltation fines. Therefore, increased runoff would not alter the existing drainage pattern in a manner that would result in substantial erosion or siltation on or off-site. This is a *less than significant* impact.

ALTERATION OF DRAINAGE PATTERN RESULTING IN FLOODING

The Project site is located within the Las Gallinas Creek Watershed. Communities in low-lying areas similar to the Project site, such as the nearby Santa Venetia, Marin Lagoon and Contempo Marin communities, must rely on pumping facilities to evacuate water during rain storms.

Oberkamper & Associates prepared the hydrologic analysis of the proposed Project.⁶ The airport site totals 119.52 acres in size; however, approximately 13.52 acres of this area are located outside the portion of the airport that is protected by levees. Oberkamper determined that only the areas of the airport site protected by the surrounding levees comprise the airport's watershed. This area, which totals 106 acres, was the subject of the Oberkamper analysis; and within which the 4.4 acre Project site sits. It should also be noted that the Project Description has changed since the Oberkamper hydrologic analysis was prepared, as described in Chapter 3 of this EIR. The Project analyzed by Oberkamper would have resulted in a larger post-development impervious surface area than would result from the current Project Description.

The existing amount of roof and hardscape within the San Rafael Airport's 106-acre watershed totals 16 acres, or 696,960 square feet. Construction of the proposed Project would increase the amount of impervious surfaces on the site by approximately 4.6 acres, or 200,376 square feet.⁷ Since impervious areas preclude the percolation of rainwater into the ground, the amount of surface water run-off will increase over the existing un-built condition. The airport site is virtually flat and is surrounded by natural creeks to the north, south and east of the site. Currently, manmade drainage swales located to the south and north of the proposed building convey existing runoff from the site to a pump station at the northeastern edge of the site. From here, untreated storm water runoff is pumped into the creek.

As previously discussed, the proposed Project would not significantly alter the existing drainage pattern of the site or the area. The creation of additional impervious surfaces is directly related to the amount of drainage that would be generated by a Project. In response to several Project referrals and interdepartmental communications, the Department of Public Works has reviewed the proposed Project and determined that there would not be a substantial increase the rate or amount of surface run-off given that: a) the additional impervious surface is a negligible amount (3.8%) of new impervious surfaces in relation to the overall 5,205,420-square-foot (119.5 acres) airport site; b) the increase in maximum depth of water during a 100-year storm would amount to approximately 1/8 of an inch, which

⁶ Oberkamper & Associates, *Hydrologic Analysis San Rafael Airport Sports Complex*, November 26, 2005.

⁷ As discussed, this area is based on a previous Project Description; current Project will result in a smaller increase in impervious surface area.

is insignificant in relation to the 3,500,000 square feet of water storage capacity that would remain on the site under the proposed Project conditions; and c) the remaining pervious portion of the site will provide opportunity to absorb much of the new run off.⁸ Lastly, based on the calculations in the hydrologic analysis, the existing pump house is capable of handling all additional drainage flows from this site to convey them into the creek.⁹

Based on the significant amount of land area that would remain permeable and allow for filtration, plus the ability of the existing drainage system to accommodate any overflow drainage, development of this Project would neither substantially alter the existing drainage pattern of the site or area nor substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off- site. Therefore, *less than significant* impacts would occur.

EXCESSIVE RUNOFF

As discussed above, the Project engineer has evaluated the existing storm drain system, including the existing pump house at the eastern end of the property, and found that it has adequate capacity for the additional runoff that would result from the proposed development. This analysis was reviewed by the City's Public Works Department and found to be appropriate. Furthermore, no new sources of pollution are expected from this site and the Project would be required to maintain consistency with state and local water quality and waste discharge requirement. Impacts would be *less than significant*.

OTHERWISE SUBSTANTIALLY DEGRADE WATER QUALITY

Site clearing, grading and compaction of soil necessary for Project construction have the potential to result in discharge of sediment and temporary water quality impacts. As a standard condition of approval, the Project would be required to employ Best Management Practices (BMPs) in accordance with City of San Rafael Municipal Code Section 9.30 (Urban Runoff Pollution Prevention). In addition, **MM Hyd-1c**, provided above, would require the Applicant to submit a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the City of San Rafael Public Works Department prior to the issuance of grading or building permits. With this mitigation measure, the Project would not result in substantial additional sources of polluted runoff, and impacts would be *less than significant*.

⁸ Karen Chew, City of San Rafael Department of Public Works, personal communication, July 22, 2008

⁹ Oberkamper & Associates, *Hydrologic Analysis*, November 6, 2005.

HOUSING OR STRUCTURE WITHIN A MAPPED 100-YEAR FLOOD HAZARD AREA

The proposed Project does not involve the construction of housing; however, the importation of engineered fill and the placement of buildings on the Project site have the potential to redirect 100-year flood waters to neighboring areas, which does include housing.

The 100-year flood elevation at the Project site is +6 NGVD 1929 MSL. The Project site is surrounded on three sides by nine foot levees and on the fourth by railroad tracks, across which is the Contempo mobile home park. According to the Project civil plans, the railroad tracks are between elevations four and six (see **Figures 3-11** through **3-15** in the Project Description).

Considering that the 100-year flood elevation of the Project site is +6 NGVD, the nine foot levees that surround the airport would keep most of the floodwaters out of the site. The western boundary of the Airport, which is defined by the railroad tracks, is between four and six feet in elevation; therefore, barring a levee breach, waters from a 100-year storm that do not fall directly on the site would likely come from this direction.

The hydrologic analysis prepared by Oberkamper & Associates determined the Project site's water storage area during a 100-year storm under both existing and proposed conditions. The depth of water and peak flow rates were determined as part of this analysis. Under existing conditions, the maximum depth of water on the site during a 100-year flood would be 0.12 feet; under proposed conditions the maximum depth would be 0.13. The grading and drainage plan shows that the finished ground elevation on the Project site would be 1.0. Therefore, under Project conditions, 100-year storm waters would reach an elevation of 1.13. Considering the western boundary of the Airport is between four and six feet, 100-year floodwaters on the site are not expected to reach the Contempo mobile home park

The proposed new structure and other site improvements would not result in a significant impediment or redirection of flood flows. With the addition of the proposed Project, less than one percent of the airport site would be developed with structures. As documented in the hydrology report prepared for the Project, the site would maintain over 3,500,000 square feet of water storage capacity in the event of a 100-year storm (see **Appendix I**). Given the overall size of the airport site, the flat topography and the limited amount of development, the proposed new structure would not significantly impede or redirect flood flows. Therefore, a *less than significant* impact would occur.

LEVEE OR DAM FAILURE

Impact Hyd-2 Flooding as a result of Levee Failure. The Project site is located within a 100-year flood zone. The Project site is protected by nine foot levees on the north, south and east; however, the site itself would be graded to a finished ground elevation of +1.0 feet above mean sea level (MSL). Unless FEMA-established wet flood-proofing standards are implemented to protect the buildings in the event of flooding, this impact is considered *potentially significant*.

The airport site is surrounded on three sides by an existing levee system. The levee system requires periodic maintenance due to settlement and erosion. In the late 1990's, the Applicant topped a portion of the levees on the eastern portion of the site in an area under the jurisdiction of Marin County. The Applicant currently maintains the entire levee system consistent with all local, state and federal standards and requirements.

An assessment of the potential for liquefaction of the Airport site's levees during an earthquake was prepared for the proposed Project by JCH & Associates.¹⁰ This report was prepared to address the issue raised that the Project site and levees are mapped within an area of potential liquefaction. The report observed that clayey soils were used as fill for the levees. Generally, the levees consist of on-site Bay Mud, but a portion of the levees were apparently constructed with imported clayey fill. As discussed in Chapter 8, *Geology and Soils*, liquefaction generally occurs when loose, saturated sandy soils experience a large vibratory load. During this time, sandy soils lose rapid strength, which could cause foundations to settle and slopes to become unstable.

In order for liquefaction to occur, a number of soil and geologic conditions must exist; without one or more of these conditions, the potential for liquefaction becomes insignificant. The site must be near a known active earthquake fault, the site must have a high groundwater table, and the site needs to be underlain by loose sandy soils below the water table.

The nearest earthquake faults that are considered to be active are the Hayward Fault, approximately seven miles northeast of the Project site, and the San Andreas Fault, approximately 16 miles southwest of the Project site. Moreover, a high groundwater table does exist at the site. However, the site is not underlain by loose sandy soils below the water table. Test borings at the site revealed it is underlain by clayey Bay Mud, and the materials used for the levees were also observed to be clayey. Clayey soils are considered to be plastic, and plastic material can deform and deflect without failure. The JCH levee failure assessment concludes that since their inspection of the levees did not encounter any saturated sandy soils in test borings, the levees are not subject to liquefaction. The study also notes that the levee

¹⁰ JCH & Associates, *Airport Site Levee Liquefaction Potential*, Letter report, February 24, 2006.

system was constructed in the 1940s and it did not fail in either the 1969 Santa Rosa earthquake with a Richter Scale measurement of 5.7 or the 1989 Loma Prieta Earthquake, with a Richter Scale measurement of 7.1. For this reason, the potential for levee failure due to earthquake induced liquefaction is considered *less than significant*.

Although the potential for levee failure due to earthquake induced liquefaction is not considered to be significant, Oberkamper & Associates prepared an analysis of a potential levee breach at the time of a 100-year flood event.¹¹ As discussed above, the flood elevation in this area is +6 NGVD 1929 MSL. The levee breach analysis provided calculations for a scenario where an instantaneous 100-foot wide breach occurs down to elevation +3 NGVD and the breach continues to widen at a rate of 100 feet per hour. The Oberkamper analysis determined that the size of the area on the entire 119.52-acre airport site that is subject to flooding at 0 NGVD is 85 acres.

Based on the above scenario, the Oberkamper analysis determined that water will reach an elevation of +1 in 45 minutes, an elevation of +1.75 in an hour and a half, and +2 in two hours and fifteen minutes. However, the levee breach analysis determined that the above scenario is conservative based on the fact that a breach would not be instantaneous, but will begin with a very narrow opening and widen over time. Moreover, when the elevation of the breach is down to +3 NGVD, the velocity of the flow will diminish to the point at which it will no longer be erosive, since the flood elevation will diminish as the tide goes out. Based on the scenario and timeline presented above, the Oberkamper levee breach analysis determined that people at the facility during the time of a 100-year storm induced levee breach would have enough time to safely leave before the depth of the water presents a hazard. Based on this analysis, the potential for the Project to expose people to a significant risk of loss, injury or death involving flooding as a result of levee failure is considered to be *less than significant*.

As previously mentioned, this subject site is located in the 100-year flood zone (identified as A-1 on FEMA maps). Chapter 18 of the City's Municipal Code contains the regulations for protection of flood hazard areas and requires that "all new structures be constructed, located, extended, converted, or altered in full compliance with the terms of this title and other applicable regulations." The City's regulations, which are derived from the Federal Emergency Management Agency (FEMA), require that all new structures be constructed at a base floor elevation (BFE) of +6 feet NGVD 1929. The City of San Rafael further recommends an additional 1 foot of BFE elevation to allow for freeboard space, resulting in the minimum BFE of at least +7 feet NGVD 1929. For non-residential Projects such as this proposal, the regulations allow structures to be built below the +7 feet elevation if the structure is dry flood-proofed or in certain instances, wet flood-proofed.

¹¹ Oberkamper & Associates, *Levee Breach Analysis*, letter report, February 24, 2006.

The Project grading and drainage plans indicate finished floor elevations of the proposed buildings would be +1.5, which is below the +7 feet requirement (see **Figures 3-11** through **3-15**). The new structure is proposed to contain indoor recreational fields on the ground floor of the building. All offices, public viewing areas, restrooms, locker rooms and other conditioned space would be located above the ground floor. Flood-proofing is defined by FEMA as “a combination of adjustments and/or additions of features to buildings that eliminate or reduce the potential for flood damage.”¹² Additionally, the National Flood Insurance Program (NFIP) allows a new or substantially improved non-residential building in an “A” zone to have a lowest floor below the BFE provided that the building has been designed, constructed and certified to be floodproofed and to meet established criteria.¹³ The Public Works Department, in consultation with FEMA, has determined that this proposed recreational use would be similar to the types of uses that are allowed to be built under the +7 feet standard as long as the portion of the building below +7 feet is flood-proofed.¹⁴ In order to ensure compliance with the non-residential flood-proofing standards established by FEMA, the following mitigation measures are recommended:

Recommended Mitigation Measures

- MM Hyd-2a** **Floodproofing.** In order to provide for one foot of freeboard elevation above the base 100-year flood elevation of +6.0 NGVD, the portions of the building below +7.0 NGVD shall be flood proofed according to the following specifications per FEMA *Technical Bulletin 3-93* (see **Appendix I**):
- The building must be watertight to the floodproof design elevation of +7 NGVD. Floodproofing to any elevation less than 1 foot above the BFE will have a serious negative impact on the flood insurance rating for the building. Generally a minimum of 1 foot of freeboard is recommended. Additional freeboard is warranted for sites where predicted flood depths may be inaccurate, such as sites within large drainage areas and rapidly urbanizing areas.
 - The building’s walls must be “substantially impermeable to the passage of water.” FEMA has adopted the U.S. Army Corps of Engineers (ACOE) definition of substantially impermeable from the

¹² FEMA, Technical Bulletin 3-93: *Non-Residential Floodproofing — Requirements and Certification for Buildings Located in Special Flood Hazard Areas in accordance with the National Flood Insurance Program*, p. 1

¹³ Ibid.

¹⁴ Andrew J. Preston, City of San Rafael Public Works Director, Letter to Applicant, *Re: Smith Ranch Airport – New Recreation Facilities*, September 15, 2005.

ACOE publication “Flood Proofing Regulations.” This document states that a substantially impermeable wall “shall not permit the accumulation of more than 4 inches of water depth during a 24-hour period if there were no devices provided for its removal. However, sump pumps shall be required to control this seepage.” Flood resistant materials, described in Technical Bulletin 2, “Flood-Resistant Materials Requirements,” must be used in all areas where such seepage is likely to occur.

- The building’s utilities and sanitary facilities, including heating, air conditioning, electrical, water supply, and sanitary sewage services, must be located above the BFE, completely enclosed within the building’s watertight walls, or made watertight and capable of resisting damage during flood conditions.
- All of the building’s structural components must be capable of resisting specific flood-related forces. These are the forces that would be exerted upon the building as a result of floodwaters reaching the BFE (at a minimum) or floodproofing design level.
- The construction plans must be signed and stamped by either a registered engineer or architect, certifying that the building and materials are designed to comply with the requirements and guidelines of the flood proofing methods established by FEMA.

MM Hyd-2b Finalize Hydrology Report and Grading and Drainage Plans. A final hydrologic report and final grading and drainage plans shall be prepared by the Applicant to include the following:

- Final hydrology report shall contain pre- and post-construction runoff calculations to support improvement plans.
- Final grading and drainage plans shall be prepared by a registered engineer and the final building pad/finished floor grade shall be verified by a licensed surveyor.

Resulting level of significance

Implementation of **MMs Hyd-1a & b**, as provided above, would enable the proposed Project’s impact associated with the risk of loss, injury or death as a result of a levee failure to a level considered *less than significant*.

SEA LEVEL RISE

Over the last 100 years, the temperature of the earth's surface has risen approximately 0.6 degrees Celsius (1.8 degrees Fahrenheit).¹⁵ Global warming causes thermal expansion of the upper layers of the ocean, which increases the volume of water, as well as melting of the earth's glaciers and polar ice fields. Tidal gauge measurement collected over the last 100 years indicate that sea level is rising relative to the land surface in many locations throughout the world.¹⁶ It is widely believed by experts that sea level will continue to rise in response to global warming, and may actually accelerate through the 21st century.¹⁷ Such increases in sea level, if sustained over long periods of time, could create or exacerbate existing coastal flooding hazards for the Project site by elevating mean sea levels. The most recent region-specific estimate from U.S. EPA predicts a 0.5-foot rise in the level of the San Francisco Bay by the year 2050.¹⁸

The Project site is located in a low-lying area adjacent to the Bay. Global warming is expected to continue to cause the rise in sea level, which could increase the area of the Project site affected by the 100-year flood. However, the entire 119.52-acre airport site, within which the 4.2-acre Project site is situated, is surrounded on three sides by nine-foot levees, which would protect the site from flooding during a 100-year storm event, which has a flood elevation of +6 NGVD. Moreover, **MM Hyd-2a** requires all portions of the building below +7 NGVD to be wet floodproofed, allowing +1 foot of freeboard above the 100-year flood elevation of +6 NGVD. For these reasons, the proposed Project would not be expected to result in significant impacts from inundation as a result of being located within 100-year flood hazard areas. However, overall, from the studies and predictions of global, regional and local sea level rise conducted so far, uncertainties in data and methods have provided an inadequate foundation to assess future sea level rise in the San Francisco Bay area. Notwithstanding the precautionary measures already in place on the site, or those recommended in this EIR, based on a thorough investigation of scientific predictions of climate change induced sea level rise, it can be ascertained that the proposed Project, because of its proximity to the Bay, has the potential to experience flooding. It is expected that a 0.5-foot rise in the level of the San Francisco Bay would occur by the year 2050. Therefore, until 2050, impacts regarding sea level rise would be less than significant. However, there is

¹⁵ United States Environmental Protection Agency, *The Probability of Sea Level Rise*, EPA 230-R-95-008, October 1995.

¹⁶ Bay Conservation and Development Commission (BCDC), *Sea Level Rise: Predictions and Implications for San Francisco Bay*, October 1988.

¹⁷ UNEP Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, 2001.

¹⁸ United States Environmental Protection Agency, EPA 230-R-95-008, *The Probability of Sea Level Rise*, October 1995.

significant uncertainty involved in making predictions of sea level rise and existing predictions cover a considerable range. Therefore, a conclusion on significance of the environmental impact of climate change-induced sea level rise on the proposed Project cannot be reached. Section 15145 of the CEQA Guidelines provides that, if after a thorough investigation a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impacts. No impact conclusion beyond the horizon year of 2050 can be made based on a thorough investigation of the issue.

All portions of the proposed building will be wet floodproofed below the +7 NGVD elevation (thereby providing at least one foot of freeboard above the 100-year flood elevation) and the site is protected by nine-foot levees. If a 0.5-foot rise in the Bay were to occur by 2050, inundation would not occur on the Project site. In addition, according to a report prepared by FEMA concerning their National Flood Insurance Program (NFIP), because of the aspects of flood insurance rate-making that already account for the possibility of increasing risk, and for new construction that builds more than one foot above the base flood elevation, the NFIP would not be significantly impacted under a 1-foot rise in sea level.¹⁹ FEMA monitors the progress in the scientific community regarding projections of future changes in sea level and will consider follow-on studies that provide more detailed information on potential impacts of sea level rise on the NFIP. Therefore, the incremental increase in inundation elevation resulting from predicted sea level rise through 2050 would not be expected to result in increased flooding hazards for the Project site and impacts associated with sea level rise over the next 50 years would be *less than significant*.

SEICHE, TSUNAMI OR MUDFLOW

A seiche is a rise or fall of the surface of a water body that typically is induced by strong winds blowing across a long axis in a lake or embayment. Since the portion of the Bay adjacent to the site lies along a short east-west axis of the San Francisco Bay estuary, seiche effects would be *less than significant*. Likewise, mudflows would be insignificant due to the location of the site relative to hillslopes. A tsunami generated by a high magnitude earthquake along the San Andreas, Calaveras, or Rogers Creek faults could generate wave run-up along the western shoreline of the Bay. Significant tsunami waves would more likely be generated by a large earthquake in the nearshore waters of the Pacific Ocean, outside the Golden Gate. However, given the distance of the project site from the western shoreline of the Bay and presence of wetlands and shallow mud flat east on the site, tsunami waves do not present a significant threat to the site. Therefore, *less than significant* impacts would result.

¹⁹ FEMA, *Projected Impact of Relative Sea Level Rise on the National Flood Insurance Program*, October 1991.

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INTRODUCTION

An environmental noise assessment was prepared in May 2005 for the Project applicant by Illingworth & Rodkin, Inc. (IRI) and a copy of the study is included as **Appendix J**. The IRI study included noise measurements and assessed the potential for noise impacts resulting from the proposed recreation facility on the Project site at the San Rafael Airport. The IRI study evaluated the impacts of the proposed outdoor soccer field, outdoor baseball field, indoor soccer field, and two additional indoor recreation facilities. Since the 2005 study, the Project has been modified. Proposed lighting would allow soccer games to occur on the outdoor soccer field during the evening hours (until 11 p.m. on Sundays through Thursdays and until midnight on Fridays and Saturdays). At the same time, the outdoor baseball field has been eliminated and replaced with a soccer warm-up and stretching area. In addition, the indoor baseball training facility has been replaced with an indoor dance studio. The resulting currently proposed indoor athletic facilities include two indoor soccer fields, a dance studio and gymnastics area.

The setting section describes the existing noise environment at the Project site (presenting IRI noise measurement results), identifies the closest noise-sensitive receptors in the Project vicinity, and outlines pertinent noise regulations. The impact analysis critically reviews and presents findings of the IRI impact assessment, supplementing the IRI findings with new information as necessary to thoroughly address noise impacts associated with the proposed Project (including changes in the Project that have occurred subsequent to completion of the 2005 IRI study). Mitigation measures are presented to address all identified significant impacts and reduce these impacts to a less-than-significant level.

SETTING

Environmental noise is usually measured in A-weighted decibels (dBA).¹ Environmental noise levels typically fluctuate over time, and different types of noise descriptors are used to

¹ The decibel (dB) is a logarithmic unit used to quantify sound intensity. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called “A-weighting” written as “dBA.”

account for this variability. Two common noise descriptors are L_{eq} , the energy-equivalent noise level, and L_{dn} , a 24-hour noise descriptor that adds a 10-dBA penalty to nighttime noise levels (10 p.m. to 7 a.m.) to account for people's increased noise sensitivity during the night.² **Appendix J** includes a description of the fundamental concepts of noise analysis.

EXISTING NOISE ENVIRONMENT

To characterize existing ambient noise levels, noise levels were monitored at the Project site for a period of one week (February 4 to 11, 2005). Noise measurements were previously measured at two nearby noise-sensitive areas for five days (July 17-22, 2002).³ The first measurement (LT-1) was located at the southern edge of the proposed outdoor soccer field, approximately 225 feet from the center of the runway. The second measurement (LT-2) was located in the residential neighborhood south of the site at the end of Vendola Drive (east of the airport runway). The third measurement (LT-3) was located west of the site in the Contempo Marin Mobile Home Park on Glacier Way. Noise measurement locations are presented in **Figure 12-2**.

In general, the noise environment at the Project site is dominated by aircraft operations associated with the runway that adjoins the southern Project boundary. Measurements indicate that ambient noise levels on the Project site (in the vicinity of the proposed outdoor soccer field, approximately 225 feet from the center of the runway) are relatively low (35 to 45 dBA L_{eq}) most of the time with occasional loud events produced by aircraft operations. Noise levels ranged from 53 dBA to 58 dBA (L_{dn}) with typical maximum noise levels (generated by aircraft flights) of 70 dBA to 100 dBA (L_{max}). The daily trends in noise levels are shown in the **Appendix J**.

Noise levels in the residential neighborhood to the south are quieter than at the Project site, ranging from 49 dBA to 54 dBA (L_{dn}) from all noise sources including aircraft noise. Noise levels in the Contempo Marin Mobile Home Park to the west were relatively higher and similar to the Project site, ranging from 54 dBA to 56 dBA (L_{dn}) with aircraft noise indistinguishable from noise generated by traffic on the local streets and other neighborhood noise.

EXISTING SENSITIVE RECEPTORS

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses

² L_{eq} : The energy equivalent noise level, a steady-state energy level which represents the acoustical energy of a given measurement period that is equal to the actual time-varying sound level measured during the same period.

³ San Rafael Airport Aircraft Noise Monitoring, Illingworth & Rodkin, Inc., Letter dated August 2, 2002.

are considered more sensitive to ambient noise levels than others. Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land-use type. Some general guidelines (U.S. EPA, 1974) are as follows: sleep disturbance may occur at levels above 35 dBA, interference with human speech begins around 60 dBA, and hearing damage may result from prolonged exposure to noise levels in excess of 85 to 90 dBA.

Certain land uses, such as residences, schools, childcare centers, churches, hospitals, and nursing homes, are generally more sensitive to noise impacts. No hospital, schools, churches, nursing homes, or childcare facilities are located in the Project's immediate vicinity. However, Smith Ranch Nursing Home is located at 1550 Silveira Parkway, and residential uses are located to the south and west of the site, and there are two modular care-taker's residences located on the airport site (but not the Project site).

To the south, the closest residential receptor is located approximately 1,000 feet from the south edge of the proposed outdoor soccer field and 750 feet from the south edge of the soccer warm-up area (Santa Venetia). The closest residential receptor to the west is located approximately 1,500 feet from the west side of the proposed indoor dance/gymnastics studios at the Contempo Marin mobile home park. Also located in this general area adjacent to the Contempo Marin mobile home park are the two airport caretaker's residences near the bridge crossing.

The McInnis Park Golf Center is located approximately 400 to 600 feet north of Project site, and facilities include a skatepark, miniature golf, driving range, clubhouse, pro shop, restaurant, nine-hole golf course, soccer fields, batting cages, softball fields, canoe launch, group picnic area, tennis courts, and a shoreline nature trail. Active recreational uses such as these are not considered to be noise sensitive. However, passive recreational uses such as birdwatching or picknicking are generally considered to be sensitive to noise since some degree of quiet is usually desirable for such uses. At this park, however, the nature trail and group picnic area in this park are not considered to be noise sensitive since they are located in proximity (within 50 to 300 feet) to active recreational uses at this park, and are not located in an extensive natural recreation area.

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**Exhibit 31
Land Use Compatibility Standards
for New Development**

Exterior Noise Exposure to the Site
 L_{dn} (dB)

Land Use	50	55	60	65	70	75	80
Residential, Hotels, Motels	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Sports Arena, Outdoor Spectator Sports	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Playgrounds, Neighborhood Parks	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Other Outdoor Recreation and Cemeteries	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable
Office and Other Commercial Uses	Normally Acceptable	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable
Industrial, Manufacturing, Utilities, Agriculture	Normally Acceptable	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Conditionally Acceptable	Clearly Unacceptable

Interior Noise Exposure
 L_{dn} (dB)

	35	40	45	50	55	60	65
Bedrooms in Residential units not in Downtown	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Other Rooms in Residential Units not in Downtown	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Bedrooms in Residential units in Downtown	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable
Hotels, Motels, Downtown Multifamily	Normally Acceptable	Normally Acceptable	Conditionally Acceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable	Clearly Unacceptable

-  Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
-  Conditionally Acceptable – Specific land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design.
-  Clearly Unacceptable – New construction of development clearly should not be undertaken.

Figure 12-1



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REGULATORY SETTING

In addition to the thresholds of significance established by CEQA, the City of San Rafael General Plan 2020 contains a Noise Element, which guides development of land uses so they are compatible with the existing and future noise environment. This element establishes noise and land use compatibility guidelines for proposed land uses and sets goals in order to minimize noise throughout the community.

SAN RAFAEL GENERAL PLAN NOISE ELEMENT

N-1 Noise Impacts on New Development: Protect people in new development from excessive noise by applying noise standards in land use decisions. Apply the Land Use Compatibility Standards (Exhibit 31 [of General Plan; see **Figure 12-1**]) to the siting of new uses in existing noise environments. These standards identify the acceptability of a project based on noise exposure. If a project exceeds the standards in Exhibit 31, an acoustical analysis shall be required to identify noise impacts and potential noise mitigations. Mitigation should include the research and use of “state of the art” abating materials and technology.

N-3 Planning and Design of New Development: Encourage new development to be planned and designed to minimize noise impacts from outside noise sources.

N-3a. Noise Mitigation. Require, where appropriate, the following mitigation measures to minimize noise impacts on proposed development projects:

- 1. Site planning.** Proper site planning is the first mitigation measure that should be investigated to reduce noise impacts. By taking advantage of the natural shape and terrain of the site, it often is possible to arrange the buildings and other uses in a manner that will reduce and possibly eliminate noise impacts. Specific site planning techniques include (a) increasing the distance between the noise source and the receiver, (b) placing non-noise sensitive land uses such as parking lots, maintenance facilities, and utility areas between the source and the receiver, (c) using non-noise sensitive structures such as garages to shield noise-sensitive areas, and (d) orienting buildings to shield outdoor spaces from a noise source.

- N-4** **Noise from New Nonresidential Development:** Design nonresidential development to minimize noise impacts on neighboring uses.
- a.** **Performance Standards for Uses Affecting Residential Districts.** New nonresidential development shall not increase noise levels in a residential district by more than L_{dn} 3 dB, or create noise impacts that would increase noise levels to more than L_{dn} 60 dB at the property line of the noise receiving use, whichever is the more restrictive standard.
- N-5** **Traffic Noise from New Development.** Minimize noise impacts of increased off-site traffic caused by new development. Where the exterior L_{dn} is 65 dB or greater at a residential building or outdoor use area and a plan, program, or project increases traffic noise levels by more than L_{dn} 3 dB, reasonable noise mitigation measures shall be included in the plan, program or project.
- N-7** **Airport/Heliport.** To the extent allowed by federal and state law, consider and mitigate noise impacts of any changes in facilities or operations that require use permit mitigations or other land use permits at the San Rafael Airport in north San Rafael and the heliport in East San Rafael (see Noise Contours for SR Airport in **Figure 12-2**).

Policies N-1 and N-3 above address potential noise impacts on the proposed Project from the existing surrounding uses; **Policies N-4 and N-5** address potential noise impacts on the existing surroundings from the proposed Project.

CITY OF SAN RAFAEL NOISE ORDINANCE AND CALIFORNIA MOTOR VEHICLE CODE

The City of San Rafael has adopted a noise ordinance (Chapter 8.13 of the Municipal Code) to control excessive unnecessary unreasonable noise in the city. The ordinance specified the following noise limits (measured on any residential property):

- Daytime: 60 dBA (L_{max}) and 50 dBA (L_{eq}) between 7:00 a.m. and 9:00 p.m., Sunday through Thursday, and between 7:00 a.m. and 10:00 p.m. Friday and Saturday.
- Nighttime: 50 dBA (L_{max}) and 40 dBA (L_{eq}) between 9:00 p.m. to 7:00 a.m., Sunday through Thursday, and 10:00 p.m. to 7:00 a.m. Friday and Saturday).

Construction activities are exempted from these limits, but are limited to a maximum of 90 dBA at the nearest adjacent property. Construction activities are also limited to the daytime hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 p.m. on Saturday. No construction is allowed on Sunday or holidays.

Vehicle noise is also exempted from ordinance limits since it is subject to regulation under the California Motor Vehicle Code. The California Motor Vehicle Code contains two provisions potentially applicable to this Project. Section 2707 of the California Motor Vehicle Code prohibits amplified sound which can be heard 50 feet or more from a vehicle and Section 27150 of the California Motor Vehicle Code controls it. The California Motor Vehicle Code provisions are enforced by the local police.

Lastly, Section 8.13.070 of the Municipal Code exempts any “[u]ses established through any applicable discretionary review process containing specific noise conditions of approval and/or mitigation measures,” such as those recommended as a result of this analysis.

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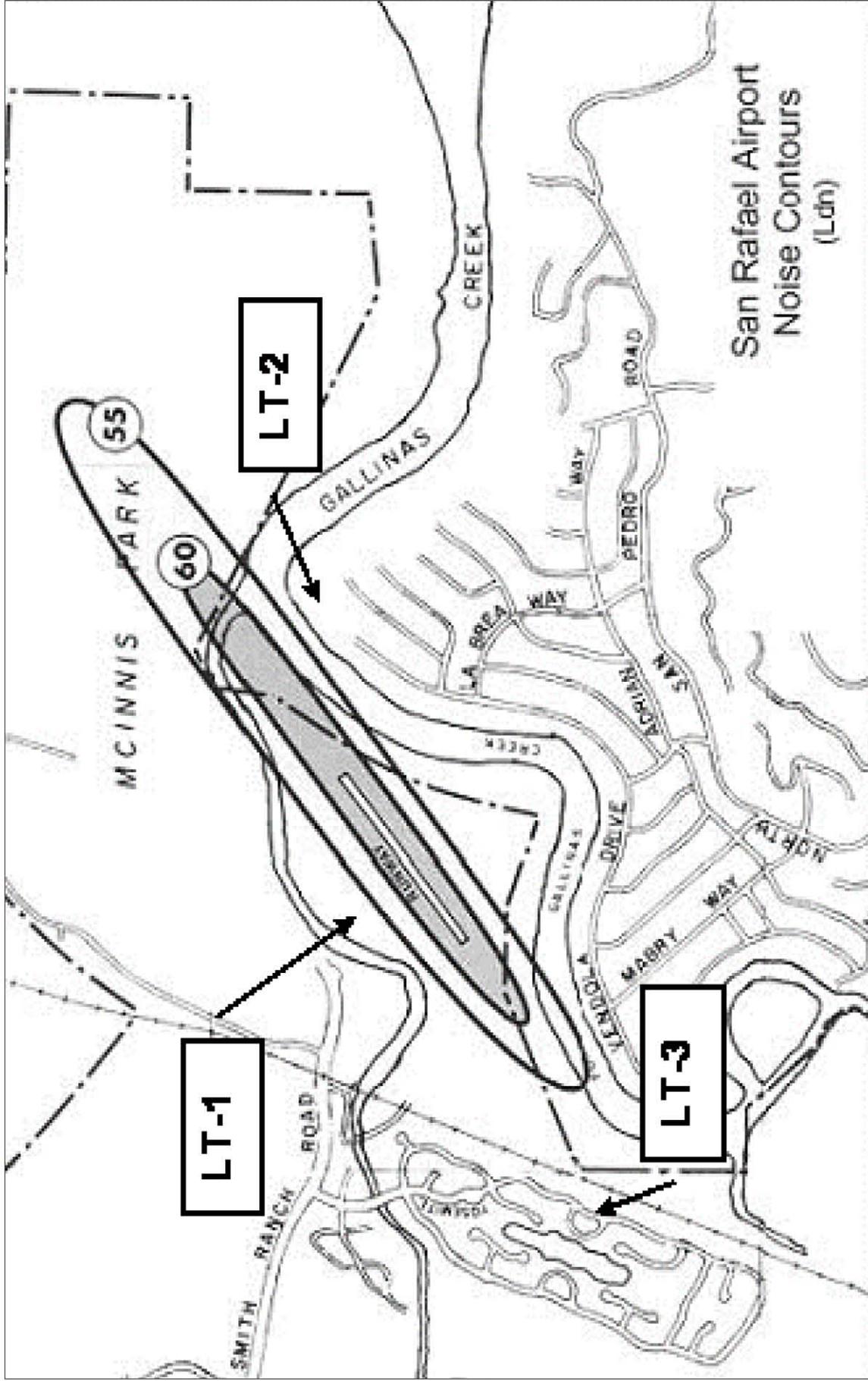


Figure 12-2
Existing Airport Noise Contours and Noise Measurement Locations

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IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The following thresholds for measuring a Project's environmental impacts are based upon CEQA Guidelines thresholds. The Project would be considered to have a potentially significant impact if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an area covered by an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

The California Environmental Quality Act (CEQA) includes qualitative guidelines for determining significance of adverse environmental noise impacts. Based on local regulations and policies, quantitative thresholds have been applied in this analysis to determine impact significance as follows:

- Noise and Land Use Compatibility: If exterior noise levels at the proposed outdoor soccer field exceed 75 dBA L_{dn} , the project would have significant noise compatibility problems.
- Operational Noise: If project-generated noise were to increase the noise levels at the closest noise-sensitive receivers by 3 dBA (L_{dn}), create noise impacts that would increase noise levels to more than 60 dBA (L_{dn}) at the property line of the noise receiving use, or violate the provisions of the San Rafael Noise Ordinance, the

project's operational noise impact would be significant. With respect to project-generated traffic noise, the San Rafael Noise Element Policy N-5 states that a traffic noise increase would be significant if it were to increase noise levels by more than 3 dBA (L_{dn}) where the exterior noise level is 65 dBA (L_{dn}) or more at the receptor.

- Construction Noise: If construction-related noise levels would exceed 90 dBA at adjacent properties, project construction would result in a significant impact since it would exceed noise limits specified in the San Rafael Noise Ordinance.

In addition to the ordinance noise limit, speech interference is also an indicator of impact on typical daytime and evening activities. A speech interference criterion, in the context of impact duration and time of day, is used to identify "substantial" increases in noise from temporary construction activities. Noise peaks generated by construction equipment could result in speech interference within nearby residences if the noise level in the interior of the building exceeds 45 to 60 dBA.⁴ A typical building can reduce noise levels by 25 dBA with the windows closed (U.S. EPA, 1974). This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 25-dBA reduction with the windows closed, an exterior noise level of 70 dBA (L_{eq}) at receptors would maintain an acceptable interior noise environment of 45 dBA. It should be noted that such noise levels would be sporadic rather than continuous in nature, because different types of construction equipment would be used throughout the construction process.

For outdoor park uses, there would be no building attenuation (i.e., noise reduction) benefits. Normal speech at a distance of a few feet generates about 65 dBA. In quiet outdoor environments (noise levels of 45 to 50 dBA), normal speech can occur at distances up to approximately 16 feet (U.S. EPA, 1974). If background noise levels exceed 60 dBA, speech interference can occur at distances greater than 7 to 10 feet. Therefore, the speech interference criterion applied to park uses is 60 dBA (L_{eq}).

- Ground-Borne Vibration: While the U.S. Bureau of Mines applies a significance threshold of 0.5 inches per second peak particle velocity (PPV) for minor structural damage, the Federal Transit Administration recommends a vibration threshold criterion of 0.2 in/sec PPV for fragile buildings (U.S. Department of Transportation, Federal Transit Administration, 2006) and this threshold is applied in this analysis.

⁴ For indoor noise environments, the highest noise level that permits relaxed conversation with 100 percent intelligibility throughout the room is 45 dBA. Speech interference is considered to become intolerable when normal conversation is precluded at 3 feet, which occurs when background noise levels exceed 60 dBA. For outdoor environments, the highest noise level that permits normal conversation at 3 feet with 95 percent sentence intelligibility is 66 dBA (U.S. EPA, 1974).

PROJECT IMPACTS AND MITIGATION MEASURES

Noise and Land Use Compatibility of Proposed Uses

Ambient noise levels at the Project site were measured to range from 53 dBA to 58 dBA (L_{dn}) with occasional loud events produced by aircraft operations. As shown in **Figure 12-1**, noise levels of 60 dBA (L_{dn}) or less are considered to be “normally acceptable” for outdoor recreational uses, neighborhood parks, and playgrounds, and no noise mitigation is required. Noise levels between 60 and 80 dBA (L_{dn}), are considered “conditionally acceptable” for these uses, where new development is permitted only after a detailed analysis of noise reduction requirements is made and abatement measures incorporated into the Project design. When compared to the San Rafael Land Use Compatibility Standards, the site’s ambient noise levels of less than 60 dBA (L_{dn}) would be considered “normally acceptable” for proposed recreational uses.

Aircraft arriving or departing from the San Rafael Airport typically generate maximum noise levels of 70 dBA to 100 dBA at the Project site. The duration of these intermittent loud events is relatively short (typically 5 to 18 seconds) and infrequent (2 to 11 events per day). There are no City or State requirements for acceptable maximum noise levels in outdoor recreation or sporting event areas. Noise levels generated by aircraft operations would briefly disrupt speech at recreational activities, but would not cause hearing damage to soccer participants or spectators. Assuming a credible worst-case condition of eleven 18-second aircraft events with an L_{max} of 100 dBA taking place during a day of soccer activities, soccer participants would be exposed to noise levels of 100 dBA (L_{max}) for a total of 3 minutes and 18 seconds over the course of one full day. The U.S. Environmental Protection Agency (U.S. EPA, 1974) found that hearing loss would occur with exposure to noise levels of 100 dBA for about 15 minutes per day every day for a period of about 10 to 20 years. The duration of noisy events is far below the thresholds established for hearing damage at the levels experienced at the site. In addition, it is unlikely that the credible worst-case condition would be achieved.

The Project is considered to be compatible with the local noise environment and therefore, this impact would be *less than significant*.

Operational Noise

Impact N-1 Operation of the proposed recreational facility would have the potential to increase noise levels on the Project site, which could adversely affect nearby residential uses. In addition, operation of the facility would increase traffic on local streets providing access to the site, which also could affect residential uses located adjacent to these streets. This impact is considered *potentially significant*.

On-site Noise Increases Associated with the Project

Outdoor Soccer Field. The proposed Project would include operation of an outdoor soccer field on the east side of the proposed recreational building. In addition, a turf-covered soccer warm-up area is proposed to the east of the field at the east end of the site. The soccer field would be located as close as approximately 1,000 feet from the closest homes to the south on Vendola Drive, and over 1,700 feet from the closest homes to the west including the Contempo Marin Mobile Home Park and the two airport caretaker's residences. The proposed recreational building also would serve as a noise barrier between the proposed field and both the mobile home park and airport residences to the west. The warm-up area would be located as close as 750 feet from homes to the south. The proposed field is proposed to operate from 9:00 a.m. to 11:00 p.m., Sunday through Thursday, and from 9:00 a.m. to 12:00 a.m. Friday and Saturday.

Noise surveys conducted by IRI at various soccer fields indicate that hourly average noise levels during soccer games at 180 feet from the center of the field are as high as 56 dBA (L_{eq}) and 60 dBA (L_{max}). It is assumed the proposed soccer field would be similar in design and use as the soccer fields monitored by IRI. At a distance of 1,000 feet, hourly noise levels generated by outdoor soccer activities would be below 41 dBA (L_{eq}) and 45 dBA (L_{max}). Such noise levels would be below existing ambient noise levels (49 dBA to 54 dBA, L_{dn}) in the closest residential areas. When the Project's impact on ambient noise levels is considered on a 24-hour basis, the Project's estimated soccer field-related noise levels would not raise existing ambient noise levels (49 dBA to 54 dBA L_{dn} at the nearest residences) by more than 3 dBA (L_{dn}) or create noise impacts that would increase noise levels to more than 60 dBA (L_{dn}) at the nearby residences. Therefore, the Project's impact on 24-hour noise levels would be *less than significant*.

When compared to the San Rafael Noise Ordinance, the Project's estimated soccer field-related noise levels of 41 dBA (L_{eq}) at the closest residences to the south would not exceed the San Rafael Noise Ordinance daytime noise limit of 50 dBA (L_{eq}) or 60 dBA (L_{max}) at residential properties between 9 a.m. and 9 p.m., Sunday through Thursday, and between 9 a.m. and 10 p.m. on Friday and Saturday.⁵ However, since soccer activities could conceivably extend until 11 p.m., Sunday through Thursday, and until midnight, Friday and Saturday, the Project's soccer-related noise levels of 41 dBA (L_{eq}) and 45 dBA (L_{max}) could slightly exceed the ordinance nighttime noise limit of 40 dBA (L_{eq}) at the closest residential property line, but would not exceed the 50-dBA (L_{max}) single-event maximum.⁶ The estimated noise levels could exceed the nighttime noise limit by 1 dBA; however, as discussed earlier in this Chapter, the existing noise environment in neighborhoods to the

⁵ The San Rafael Noise Ordinance defines "Daytime" as the period between 7:00 a.m. and 9:00 p.m., Sunday through Thursday and between 7:00 a.m. and 10:00 p.m., Friday and Saturday.

⁶ The San Rafael Noise Ordinance defines "Nighttime" as the period between 9:00 p.m. and 7:00 a.m., Sunday through Thursday and between 10:00 p.m. and 7:00 a.m., Friday and Saturday.

south of the Project site range from 49 to 54 dBA (L_{dn}) and the noise levels at the adjacent Contempo Marin Mobile Home Park range from 54 dBA to 56 dBA (L_{dn}).

Estimated levels would only exceed the noise limit by 1 dB and noise from such activities can vary with the number and orientation of spectators and other factors such as corresponding background noise levels. Nevertheless, this exceedance indicates there is a potential for noise disturbance to occur at the closest homes to the south between 9 p.m. and 11 p.m., Sunday through Thursday, and between 10 p.m. and midnight, Friday and Saturday. Also, noise from numerous parked cars (e.g., engine start ups, slamming doors, etc.) in the parking lot located south of the field as they leave simultaneously after a game during these late evening hours could be noticeable at these residences. Although the noise level exceedance could be small, there is the potential that the characteristics of the noise (noise from spectators, referee whistles, parking cars, etc.) would contrast with the ambient noise environment and therefore, would be noticeable. It should also be noted that these residential areas are currently subject to recreational activities at the existing McInnis Park (in addition to noise from aircraft operations). Playing fields in this park are located a minimum of about 1,400 feet from the homes on Vendola Drive.

Typical residential construction with windows open for ventilation provides approximately 15 dBA of outdoor-to-indoor noise reduction. Standard construction with windows closed provides approximately 22-25 dBA of outdoor-to-indoor noise reduction.⁷ Therefore, considering the existing ambient noise levels in the closest residential areas range from 49 dBA to 54 dBA, L_{dn} , their corresponding interior noise levels would range from 34 dBA to 39 dBA, L_{dn} with the windows open and 24-29 dBA to 29-34 dBA, L_{dn} with the windows closed. The City of San Rafael *General Plan 2020's* interior noise exposure thresholds are provided in **Figure 12-1**. According to this figure, the interior noise threshold is 40 dB L_{dn} for bedrooms in residential units located outside the downtown area, and the threshold is 45 dB L_{dn} for other rooms in residential units located outside the downtown area. The Project noise analysis estimates that soccer field-related noise level would be 41 dBA (L_{eq}) at the closest residences to the Project site, which would exceed the nighttime noise threshold of 40 dBA (L_{eq}). However, a one decibel increase in exterior noise level during these hours would likely go unnoticed given that a) the existing ambient noise levels in this area is 49 dBA to 54 dBA, L_{dn} , b) considering the noise exceedance is of an exterior threshold, residents are unlikely to be outside during the hours of 9 p.m. and midnight to experience any increase, and c) considering the 15-25 dBA outdoor-to-indoor noise reduction provided by standard construction (depending upon whether windows are open or closed) interior noise levels at the nearest residences would remain well below the 40 dBA and 45dBA interior noise thresholds at any time of the day or night. Although the increase in noise levels would be largely imperceptible, the fact that the evening exterior noise threshold of 40 dBA (L_{eq}) may be exceeded is considered a *potentially significant* impact.

⁷ Rich Rodkin, Illingworth & Rodkin, personal communication, 6/13/08.

Since both the homes in the Contempo Marin Mobile Home Park and the airport caretaker's residences are farther away and behind the proposed recreational building, Project-related noise levels from the proposed soccer field are expected to remain below the ordinance daytime and nighttime limit at these homes. It should also be noted that playing fields in McInnis Park are located closer to these homes (a minimum of approximately 450 feet) than Project recreational facilities.

Although there are no ordinance limits for recreational uses such as those located to the north in McInnis Park and these recreational uses are not considered noise-sensitive, the shoreline trail would be located as close as 300 feet from the proposed soccer field. At this distance, hourly noise levels generated by outdoor soccer activities could reach 52 dBA (L_{eq}) and 56 dBA (L_{max}). While soccer-related noise would likely be audible on this trail, the west end of the trail is already located closer to soccer and softball fields within the Park and already subject to such noise levels. Therefore, the Project's soccer field-related noise is not expected to significantly affect existing recreational uses in McInnis Park.

The Smith Ranch Nursing Home is unlikely to be negatively impacted by Project noise, as it is located over a quarter mile (1,510 feet) northwest of the Project site. In between the Project site and the Smith Ranch Nursing Home is McInnis Park. The nursing home is situated across the street from McInnis Park's primary entrance, indicating activities at McInnis Park already comprise a significant degree of the nursing home's ambient noise environment. Based on this, it is unlikely that operational activities at the proposed Project, over a quarter-mile to the southeast, would cause an increase in existing ambient noise levels at the nursing home by 3 dB L_{dn} or more, or result in a total ambient noise level greater than 60 dB L_{dn} .

Indoor Soccer Field. The proposed Project would include operation of an indoor soccer field in the proposed recreational building. Similar to the outdoor soccer field, the proposed building would be located over 1,000 feet from the closest homes to the south on Vendola Drive and the closest homes to the west in the Contempo Marin Mobile Home Park. While noise generated inside the facility would be significantly reduced by the walls and windows of the facility, there would also be more noise reflection inside the building. The proposed indoor soccer field is proposed to operate from 9:00 a.m. to 11:00 p.m., Sunday through Thursday, and from 9:00 a.m. to 12:00 a.m. Friday and Saturday.

Based on measurements taken outside a gymnasium with windows open during a basketball game (which accounts for noise reflection of crowd noise), noise levels could reach 59 dBA (L_{eq}) at 60 feet from the building's windows. A basketball game was chosen because they are typically louder than indoor soccer games and the intent was to provide a conservative estimate. At 1,000 feet, such noise levels would decrease to 35 dBA (L_{eq})⁸, which would not

⁸ A short-term (15-minute) noise measurement was taken at a school gymnasium (K-8) during a basketball game with approximately 100 spectators and players in attendance. Noise levels were measured at 87 dBA (L_{eq}) inside the gym and 59 dBA (L_{eq}) outside the gym (approximately 60 feet from the exterior wall/windows).

exceed the ordinance daytime or nighttime limits at the closest residential receptors. Therefore, noise generated by the proposed indoor soccer field (with windows open) would be *less than significant*.

Dance and Gymnastics Studios. The proposed Project would include operation of indoor dance and gymnastics studios on the west side of the proposed recreational building. Similar to other Project facilities, the proposed studios would be located over 1,000 feet from the closest homes to the south on Vendola Drive and the closest homes to the west in the Contempo Marin Mobile Home Park. The proposed studios are proposed to operate from 9:00 a.m. to 9:00 p.m., seven days a week.

Amplified music is expected to be used in the proposed indoor dance and gymnastics studios. It is estimated that amplified music could reach maximum noise levels of approximately 70 L_{eq} within the room and still allow an instructor to be audible (with raised voice) at a distance of three to six feet. Noise levels outside the proposed building would be about 15 dBA lower with windows and doors open, and about 20 to 25 dBA lower with windows and doors closed. With the windows open, such interior noise levels would be approximately 55 dBA just outside the building and approximately 35 dBA or less at the closest residences, at least 20 dB lower at a distance of 1,000 feet. Such levels would not exceed ordinance daytime or nighttime limits at the closest residential receptors. Therefore, noise generated by the proposed dance and gymnastics studios (with windows open) would be *less than significant*.

Mechanical Equipment. In addition to the noise generated by the recreational activities themselves, noise could also be generated by rooftop mounted mechanical equipment associated with the building. This equipment typically generates noise levels of up to 65 dBA measured at a distance of 25 feet. At the nearest residence, this translates to a noise level of less than 33 dBA, typical of the lowest noise levels measured in the area during the nighttime hours and well within the allowable limits of the City of San Rafael's Noise Ordinance. Therefore, noise generated by operation of the Project's rooftop mechanical equipment would be *less than significant*.

Off-site Noise Increases Associated with the Project

The proposed Project is estimated to generate approximately 1,701 average daily trips (ADT) or approximately 268 trips during the PM peak hour on busy activity days, nearly all of which would be passenger cars. Project-related traffic would use Smith Ranch Road and

Interior noise levels in the gym varied from 73 dBA with no crowd noise to a maximum of 100 dBA (L_{max}) during the loudest cheers. With all operable windows opened slightly, the gym attenuated noise levels by 20 to 30 dBA (20-dBA attenuation with low levels of crowd noise and 30-dBA attenuation when crowd noise was highest). Exterior noise levels (at 60 feet from the exterior wall of the gym) were approximately 55 dBA with no crowd noise, 60 dBA with a low level of cheering, and momentary noise peaks of 70 dBA (L_{max}) during the loudest cheers.

North Avenue to access the airport driveway road. Traffic speeds along North Avenue are currently very low (5 to 15 mph) because traffic must slow to a near stop as it approaches the bridge, due to a sharp 90-degree turn in the roadway. Traffic speeds on this street would continue to be low with the proposed Project.

West of the site, traffic noise levels associated with North Avenue are estimated at approximately 51 to 53 dBA (L_{dn}) at 50 feet from the roadway centerline. There are two residences located on the north side of North Avenue (approximately 25 feet from the centerline) and noise levels at these residences are estimated at approximately 54 to 56 dBA (L_{dn}). The two mobile homes on the south side of North Avenue (directly across the street from the two residences) are protected by a seven-foot high noise barrier. Although this barrier protects these residences from traffic noise on North Avenue, these residences are still subject to noise generated by aircraft overflights. The 2002 noise measurement survey by IRI found that noise levels in the Contempo Marin Mobile Home Park were approximately 54 to 56 dBA (L_{dn}) including aircraft noise, unshielded traffic noise (the seven-foot barrier was not yet built at the time of this measurement), and neighborhood noise.

The Project's 1,701 trips per day to North Avenue would generate noise levels of approximately 55 dBA (L_{dn}) at 50 feet or 58 dBA (L_{dn}) at 25 feet. With Project-related traffic noise increases, future noise levels along North Avenue are estimated to reach 57 dBA (L_{dn}) at 50 feet or 60 dBA (L_{dn}) at 25 feet. Addition of these noise levels to existing noise levels would result in noise increases of 3 to 6 dBA at the two residences located adjacent to North Avenue. It is important to note that existing noise from overflying aircraft also contributes to the ambient noise environment at these residences. Noise increases of 5 dBA are readily noticeable to most people. Therefore, Project-related traffic noise increases along North Avenue are expected to be noticeable at these residences. When compared to the City's significance threshold as defined by Noise Element Policy N-5, such an increase would be *less than significant* since future noise levels, even with the estimated increase, would remain below 65 dBA (L_{dn}) at the two residential receptors located north of this road. Traffic noise levels at the mobile homes to the south are also expected to remain well below 65 dBA (L_{dn}) due to the greater setback (45 to 50 feet from the roadway centerline) and existing noise barrier.

Farther north, the closest home at the east end of Sailmaker Court is located approximately 80 feet west of North Avenue and about 70 feet south of the edge of Smith Ranch Road. Traffic volumes and speeds along Smith Ranch Road are substantially higher than those along North Avenue and generate higher noise levels at this residence. During the arrival and departure from soccer activities, traffic along the driveway would be audible in the absence of other noise sources. However, the primary noise sources at this residence would continue to be existing traffic along Smith Ranch Road and aircraft operations. Based on existing traffic volumes along Smith Ranch Road (presented in this EIR) and the estimated Project trips, Project-related traffic would increase noise levels at this residence from approximately 59 dBA to 61 dBA (L_{dn}), a 2 dBA increase along Smith Ranch Road. When compared to the

City's significance threshold as defined by Noise Element Policy N-5, such an increase would be *less than significant* since future noise levels along this section of Smith Ranch Road would remain below 65 dBA (L_{dn}) at this residence.

The residents in the area have expressed concern that vehicles passing by late at night may have their windows down and their stereos blasting. According to IRI, this is not typical for vehicle passbys, and this activity would be controlled by the Motor Vehicle Code, which states that it is illegal to operate a car amplification system which is audible at a distance of 50 feet from the car. Therefore, this impact would be *less than significant*.

Recommended Mitigation Measure

MM N-1 **Evening Noise.** To address the potential that noise from late evening games becomes an annoyance to neighbors to the south due to the potential of a 1 decibel increase over maximum allowable nighttime noise levels, either of the following measures shall be implemented:

- Close the outdoor fields at 9 p.m., Sundays through Thursdays, and 10 p.m. on Fridays and Saturdays. Alternatively, the project sponsor shall annually monitor noise levels during nighttime games to determine whether the use of outdoor fields and warm-up areas actually causes the 40 dBA (L_{dn}) nighttime noise threshold to be exceeded at the closest residential property boundary. If the threshold is exceeded, the outdoor facilities shall close at 9 p.m., Sundays through Thursdays, and 10 p.m. on Fridays and Saturdays. or
- Project sponsor shall revise the site plan to provide sufficient space to accommodate a noise wall along the southern boundary of the parking lot and soccer warm up areas. If noise measurements of nighttime games indicate that the ordinance noise limits are exceeded, the project sponsor could build a noise wall instead of closing the outdoor fields at 9 p.m. If a noise wall is constructed, it shall be subject to the following requirements:
 - Pursuant to General Plan Policy S-4, the wall's location shall be subject to a geotechnical investigation, and the wall's design and construction shall proceed in accordance with the recommendations of the geotechnical investigation, as set forth in the City's Geotechnical Review Matrix.
 - The design of the sound wall shall be subject to review and approval by the City's Design Review Board.

- The sound wall shall be constructed consistent with Part 77 of the Federal Aviation Regulations, *Objects Affecting Navigable Airspace*, specifically, the 7:1 transitional surface that governs Airport Safety Zone 5 – Sideline Zone, as analyzed by airport hazards safety specialist.

Resulting level of significance

Implementation of **MM N-1** will reduce any noise associated with Project operations to a level considered *less than significant*.

Construction Noise

Impact N-2 Construction activities could disrupt softball practices or games on the closest field, a *potentially significant* impact.

Impact N-3 Pile driving-related noise levels could result in speech interference effects at recreational uses in McInnis Park. Speech interference effects could disrupt soccer or softball practices or games, a *potentially significant* impact.

Noise generating activities associated with the construction of the Project would temporarily elevate noise levels at nearby noise sensitive receptors. Project construction activities would include grading of the site, pile driving, paving of roadways, construction of Project infrastructure, and construction of buildings. With the exception of pile driving (discussed below), the highest noise levels would be generated during grading of the site, with lower noise levels occurring during building construction. Large pieces of earth-moving equipment, such as graders, scrapers, and bulldozers, generate maximum noise levels of 80 to 85 dBA at a distance of 100 feet. Typical hourly average construction-generated noise levels are about 75 to 80 dBA measured at a distance of 100 feet from the site during busy construction periods. These noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor.

The closest noise-sensitive receptors would be residences located in the Santa Venetia development on Vendola Drive, and are located over 1,000 feet south of the proposed building, but they would be closer to the soccer warm-up area and parking lots (minimum of 650 to 850 feet away, respectively). Residential receptors are also located approximately 1,300 feet to the west in the Contempo Marin Mobile Home Park. At the closest residences, typical hourly average construction-generated noise levels would be approximately 55 to 60 dBA (L_{eq}) during busy construction periods. Maximum construction-related noise levels could intermittently exceed ambient noise levels at the closest residences and be audible.

Temporary disturbance (e.g., speech interference) can occur if the noise level in the interior of a building exceeds 45 to 60 dBA.⁹ To maintain such interior noise levels, exterior noise levels at the closest residences (with windows closed) should not exceed 70 to 80 dBA and this exterior noise level is used as a significance threshold or criterion for residential uses. Therefore, such construction-related noise levels would not interfere with normal outdoor or indoor residential activities at the closest residences.

At McInnis Park, Project facilities would be located as close as approximately 300 feet from the shoreline trail, about 400 feet from the closest golf facilities and softball field, and approximately 600 feet from the closest soccer field. At such distances, construction activities would produce typical hourly average noise levels of 65 to 70 dBA at the shoreline trail, 63 to 68 dBA at the closest golf and softball facilities, and 60 to 65 dBA at the closest soccer fields. Such levels would exceed the outdoor speech interference criterion by up to 10 dB at the closest facilities located north of Gallinas Creek – the parking lot, shoreline trail, putting green, one hole of the 9-hole golf course, and the closest softball field. While such elevated noise levels would be noticeable, they would not be expected to significantly disrupt or preclude putting, golf or trail-related activities, but could disrupt softball practices or games on the closest field, a *potentially significant* impact. Construction noise at the soccer fields would not exceed the 60-dBA outdoor speech interference criterion. It should be noted that these noise levels represent the maximum noise levels that would occur when construction equipment is operated along the Project's northern boundary. Construction-related noise levels would be lower when equipment is operated on other parts of the Project site, and construction-related noise would be sporadic rather than continuous, varying from day to day and hour to hour depending on the types of activities and equipment being operated. Noise levels would also vary depending on where construction equipment is being operated on the Project site.

Implementation of **MM N-2**, engine controls, could reduce construction-related equipment noise levels below the 60-dBA outdoor speech interference criterion at the closest McInnis Park facilities.

It is expected that the Project would require the driving of up to 100 piles to provide a foundation for the proposed building. A diesel-powered pile driving hammer would be used to seat the piles. Diesel hammers generate maximum noise levels of 100 dBA at 100 feet during each blow. This translates to a level of approximately 80 dBA at the closest homes in Santa Venetia or Contempo Marin Mobile Home Park and maximum noise levels of 90 dBA at the shoreline trail, 88 dBA at the closest golf facilities, and 85 dBA at the soccer fields in

⁹ In indoor noise environments, the highest noise level that permits relaxed conversation with 100% intelligibility throughout the room is 45 dBA. Speech interference is considered to become intolerable when normal conversation is precluded at 3 feet, which occurs when background noise levels exceed 60 dBA (U.S. Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Condensed Version, 1974)*).

McInnis Park. Such pile driving-related noise levels would not exceed the 90-dBA ordinance construction noise limit at any nearby uses, but could result in speech interference effects at recreational uses in McInnis Park. Speech interference effects could disrupt soccer or softball practices or games, a *potentially significant* impact. Noise impacts associated with pile driving are typically mitigated by pre-drilling the holes to reduce the number of blows required to seat the pile and by completing the pile driving phase as quickly as possible. In some cases, multiple pile drivers are used to reduce the duration of exposure to pile driving noise. Therefore, implementation of **MM N-3**, pre-drilling holes and coordinating pile driving activities with soccer or softball activities would reduce pile-driving noise impacts to less than significant.

Recommended Mitigation Measures

MM N-2 **Construction Time Restrictions and Engine Controls.** The Project sponsor shall implement the following engine controls to minimize disturbance at McInnis Park recreational facilities during Project construction:

- Construction activities on the site shall be limited to the hours specified in the San Rafael Noise Ordinance:
- Construction equipment shall utilize the best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) in order to minimize construction noise impacts. These controls shall be used as necessary to reduce heavy equipment noise to 72 dBA (L_{eq}) at 100 feet to ensure acceptable noise levels are maintained at the closest (southernmost) softball field.
- The applicant shall contact the County Parks and Open Space Director and General Manager to obtain game and practice field schedules and schedule work to avoid games and practices on the closest field, to the maximum extent feasible. In addition, the applicant shall contact the program manager for McInnis Park to advise them of the pending construction project in order to help facilitate a schedule that would avoid most game and practice times.
- If impact equipment such as jack hammers, pavement breakers, and rock drills is used during construction, hydraulically or electric-powered equipment shall be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used. External jackets on the tools themselves shall also be used, where feasible.

- A Noise Disturbance Coordinator shall be designated to respond to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures warranted to correct the problem be implemented. The construction schedule and telephone number for the Noise Disturbance Coordinator shall be conspicuously posted at the Project construction site.

MM N-3

Pile Driving Noise. For proposed pile driving, quieter procedures shall be used such as pre-drilling holes to the maximum depth feasible and using more than one pile driver to shorten the total pile driving duration. To minimize disruption of recreational activities on the closest (southernmost) field at McInnis Park, the applicant shall contact the County Parks and Open Space Director and General Manager to obtain game and practice field schedules and schedule work to avoid games and practices on the closest field, to the maximum extent feasible. In addition, the applicant shall contact the program manager for McInnis Park to advise them of the pending construction project in order to help facilitate a schedule that would avoid most game and practice times. The applicant shall also provide the County with contact information for noise complaints.

Resulting Level of Significance

Implementation of the above mitigation measures could reduce temporary construction-related noise impacts to a level of *less than significant*.

Ground-Borne Vibration

Construction of Project facilities in proximity to existing structures could cause vibration that could disturb local residents, but would not be expected to cause cosmetic damage to buildings and structures. Vibration measurements taken for Bay Area projects involving pile driving through fill over Bay Mud (conditions that could be similar to the site, as discussed in Chapter 8: Geology and Soils of this document) indicate vibration would be less than 0.1 inches per second, peak particle velocity (in/sec PPV) at 200 feet (Wilson Ihrig & Associates, 2005). The closest existing structures would be approximately 500 feet to the north in McGinnis Park, 900 feet to the west at the airport, and over 1,000 feet to the south at residences on Vendola Drive.

The Federal Transit Administration recommends a vibration threshold criterion of 0.2 in/sec PPV for fragile buildings (U.S. Department of Transportation, Federal Transit Administration, 2006) and this threshold is appropriate to apply to any construction activities occurring during the daytime hours. The estimated construction vibration would be less than 0.1 in/sec PPV at 200 feet and even lower at greater distances. Therefore, the potential for

off-site cosmetic or structural damage to result from Project construction would be low, and impacts related to construction-related vibration would be *less than significant*.

Although structural or cosmetic damage is not expected to occur, it should be noted that vibration associated with pile driving activities could be perceptible at adjacent and nearby structures. Required restriction of pile driving activities to the daytime hours (**MM N-1**) would help reduce potential vibration annoyance effects.

TRANSPORTATION AND TRAFFIC

INTRODUCTION

The traffic evaluation for the proposed Project contained in this chapter is based on the traffic impact analysis prepared by Fehr & Peers in September, 2007, which is located in **Appendix K** of this EIR. The City of San Rafael Traffic Engineering Division has provided the City's traffic model runs plus signalized intersection and arterial level of service analysis for all scenarios.

The analysis includes an evaluation of transportation conditions during a typical weekday PM peak hour, occurring between 4:00 and 6:00 PM, when the surrounding roadway network has the highest traffic volumes. Additionally, the analysis includes an estimation of Project conditions during a typical weekend, as many of the recreational facilities will have scheduled classes and events during this time. Since the proposed recreational facility would open after the AM peak period (7:00 to 9:00 AM), the Project is not expected to impact AM peak period conditions and analysis of the AM peak period was not required.

This report presents the analysis of the following scenarios:

- **Baseline Conditions** — Existing conditions volumes plus traffic estimates for approved, but not yet constructed, developments; large known vacancies; traffic increases due to regional growth expected prior to the proposed Project opening; and approved/funded transportation system improvements expected to be in place when the Project opens.
- **Baseline With Project Conditions** — Traffic volumes from baseline conditions plus traffic volume estimates for the proposed Project.
- **General Plan No Project Conditions** — Traffic estimates for development patterns proposed in the San Rafael 2020 General Plan; traffic increases due to regional growth expected through year 2020; and approved/funded/proposed transportation system improvements.
- **General Plan With Project Conditions** — Traffic volumes from General Plan no project conditions plus traffic volume estimates for the proposed Project.

It should be noted that traffic estimates from another project had previously been approved as part of the City of San Rafael's Project Selection Process (PSP).

EXISTING SETTING

The baseline scenario includes existing transportation conditions plus traffic generated from approved developments that are under construction. The City of San Rafael maintains a current Traffic Model database of baseline traffic volumes and provided calculations of signalized intersection and arterial LOS and delay for this traffic study. This scenario will serve as the baseline condition for the analysis of the proposed project's transportation impacts.

ROADWAY NETWORK

The following roadways are important arterials, highways, and access roads near the proposed Project site.

Regional Access

US 101 is the major north-south freeway in Marin County and provides regional access to the Project site. The freeway is located approximately three-quarters of a mile west of the Project site and extends southward to San Francisco and beyond and northward to Sonoma County and beyond. The freeway provides three travel lanes in each direction, with a fourth auxiliary lane in both the northbound and southbound directions between the Second Street on-ramp and the Interstate 580 off-ramp. An interchange at Lucas Valley Road/Smith Ranch Road provides access from US 101 to the Project site.

Local Access

The local circulation system serving the Project vicinity is shown on **Figure 13-1**. The Project site is located north of downtown San Rafael and east of US 101. The following roadways provide local access to the proposed Project site.

Lucas Valley Road — Lucas Valley Road is primarily a two-lane arterial road that runs east-west, west of US 101. Just west of US 101, Lucas Valley Road becomes a four-lane road, with two lanes in each direction and entrance and exit ramps to US 101. East of US 101, Lucas Valley Road becomes Smith Ranch Road.

Smith Ranch Road — This four-lane arterial road with on-street parking is a major access route from US 101 to the Project site. In addition to the unsignalized crosswalk at Silveira Parkway/Smith Ranch Road intersection, there is a marked crosswalk at the Yosemite Road/Smith Ranch Road intersection.

Silveira Parkway — The Project driveway would be located opposite Silveira Parkway (a local street), along Smith Ranch Road. Silveira Parkway is a two-lane road with on-street parking that extends from North Avenue to Smith Ranch Road. There are currently sidewalks along Silveira Parkway and an uncontrolled crosswalk at the Silveira Parkway/Smith Ranch Road intersection.

Bridge Access — Access to the Project site is provided via a private, paved two-lane road that winds south and west from Smith Ranch Road, then south over an existing single-lane bridge crossing the North Fork of Gallinas Creek

STUDY INTERSECTIONS

Five intersections were selected by the City of San Rafael staff as those most likely to be affected by the Project and thus warranting analysis. Additionally, based on the needs of nearby residents, two of these intersections underwent further signal warrant analysis.

An analysis for the proposed Project focused on the following intersections (**Figure 13-1**):

1. Smith Ranch Road and Silveira Parkway
2. Smith Ranch Road and Redwood Highway
3. Smith Ranch Road and US 101 Northbound Ramps
4. Lucas Valley Road and US 101 Southbound Ramps
5. Lucas Valley Road and Las Gallinas Avenue

In addition to isolated intersection analysis, arterial analysis was also performed along the following road segments:

1. Eastbound Smith Ranch Road
2. Westbound Smith Ranch Road
3. Eastbound Lucas Valley Road
4. Westbound Lucas Valley Road

INTERSECTION AND ARTERIAL LEVELS OF SERVICE

Level of service (LOS) is a tool to measure operation conditions and congestion levels. LOS thresholds are different between intersections and arterial roads. For signalized and unsignalized intersections, LOS is an indication of seconds of delay; for arterial segments, LOS is an indication of travel speed and delay at intersections. In order to ensure an effective roadway network, the City of San Rafael has established traffic LOS standards for the A.M.

peak hour (7:00 a.m. to 9:00 a.m.) and P.M. peak hour (4:00 p.m. to 6:00 p.m.). The San Rafael *General Plan 2020* Circulation Element provides policies that establish the thresholds the City utilize to evaluate traffic impacts with respect to both intersection LOS and arterial segment LOS. These policies are described in detail below under the Regulatory Setting heading. Typically, the City evaluates traffic impacts with respect to intersection LOS; however, when the intersections and roadways in a study area exhibit certain characteristics, the LOS for an arterial segment is the primary method of analysis for traffic impacts. The analysis of the traffic impacts in this chapter of the EIR utilizes both the intersection and arterial segment thresholds to determine the potential level of impact for the proposed Project.

The baseline LOS of study intersections can be seen in **Table 13-1**. The baseline lane configurations and peak hour traffic volumes are shown on **Figures 13-2** and **13-3**, respectively. All intersections with the exception of the US 101 Ramps and Smith Ranch Road (AM Peak) are operating at satisfactory conditions. The baseline levels of service of arterial segments can be seen in **Table 13-2**. All segments are operating at satisfactory conditions. All LOS calculations are supplied in the appendix of the traffic impact study, which is located in **Appendix K** of this EIR.

ID	Intersection	Time Period	Baseline Conditions	
			LOS	Delay (sec/veh)
1	Silveira Parkway & Smith Ranch Road	AM	A	3.3 ¹
		PM	A	1.4 ¹
2	Redwood Highway & Smith Ranch Road	AM	B	12.3
		PM	C	24.3
3	US-101 Ramps & Smith Ranch Road	AM	D	51.6
		PM	B	10.1
4	US-101 Ramps & Lucas Valley Road	AM	B	13.9
		PM	C	21.7
5	Las Gallinas Ave. & Lucas Valley Road	AM	C	34.4
		PM	B	19.3

¹ Worst approach is noted for side street stop controlled intersections; **Bold** denotes unacceptable level of service.
Source: Fehr & Peers, 2007

Table 13-2
Arterial Segment Baseline Level of Service

ID	Arterial	Time Period	Baseline Conditions	
			LOS	Speed (mph)
1	Eastbound Smith Ranch Road	AM	E	12
		PM	D	15
2	Westwood Smith Ranch Road	AM	C	18.6
		PM	D	14.4
3	Eastbound Lucas Valley Road	AM	D	17.9
		PM	D	19.8
4	Westbound Lucas Valley Road	AM	B	28.9
		PM	B	31

Source: Fehr & Peers, 2007

BICYCLE, PEDESTRIAN, AND TRANSIT NETWORKS

Bicycle Network

Bicycle facilities consist of bicycle lanes, trails, and paths. Typically, bicycle facilities are grouped into three categories:

- Class I facilities consist of off-road bicycle paths and are generally shared with pedestrians. Class I facilities may be adjacent to an existing roadway, or may be entirely independent of existing vehicular facilities.
- Class II facilities consist of striped bicycle lanes on roadways. These facilities reserve a minimum of four to five feet of space along each side of the roadway for bicycle traffic.
- Class III facilities consist of bicycle routes. Class III facilities may not have a striped, reserved right of way for bicycles, but are signed and ideally designed to accommodate and encourage bicycle traffic.

San Rafael's adopted Bicycle and Pedestrian Master Plan identifies approximately 2.7 miles of Class I bicycle facilities and 3.9 miles of Class II bicycle facilities.¹

Pedestrian Network

There are currently sidewalks serving pedestrians along Smith Ranch Road and Silveira Parkway, two roads near the Project site. There are no pedestrian crossing signals along

¹ City of San Rafael, *Bicycle Master Plan*, 2002.

Smith Ranch Road and Silveira Parkway; however, there are crosswalks serving this intersection. Additionally, there are designated pedestrian crosswalks on the western side of Yosemite Road and the southern side of Smith Ranch road, at the Smith Ranch Road/Yosemite intersection. There is no sidewalk along Silveira Parkway from the Smith Ranch Road intersection to the Project site.

Transit Network

Golden Gate Transit is the primary transit provider within Marin and Sonoma Counties. Golden Gate Transit provides extensive bus service to the San Rafael Transit Center in Downtown San Rafael from Marin and Sonoma counties, San Francisco, and the Del Norte BART Station in Contra Costa County. Routes 70 and 75 provide service to the area near the Project site.

Route 75 provides Marin County commuter service between the Santa Rosa Transfer Center and the San Rafael Transit Center, with a stop at the Smith Ranch Park & Ride lot, located approximately half a mile from the Project site. This bus runs approximately every half hour northbound during evening hours and southbound during morning hours from Monday through Friday.

Route 70 provides transbay service between the Santa Rosa Transfer Center and San Francisco. The bus line has regular service running approximately every half-hour to an hour during the weekdays and weekends.

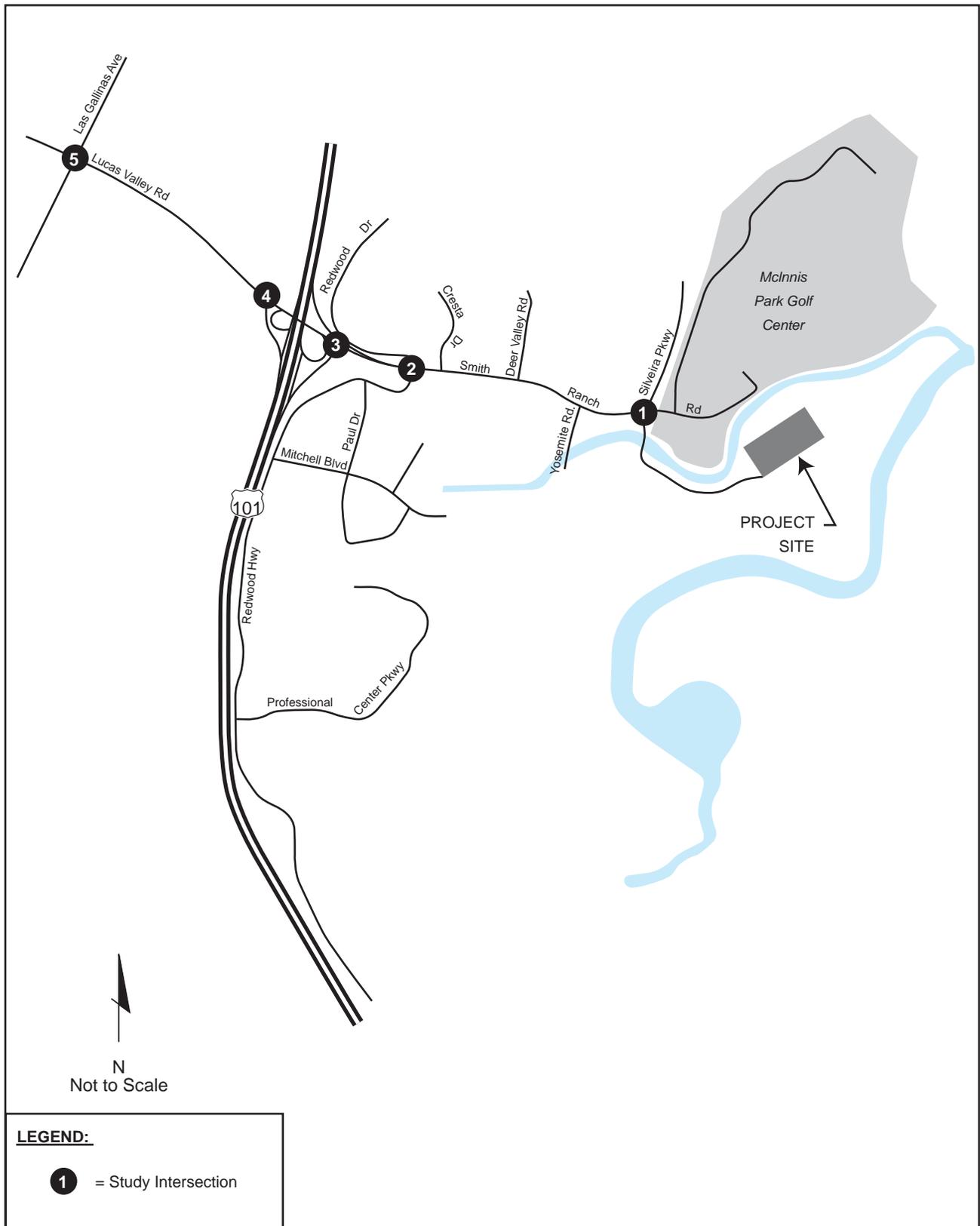


Figure 13-1
Study Intersections



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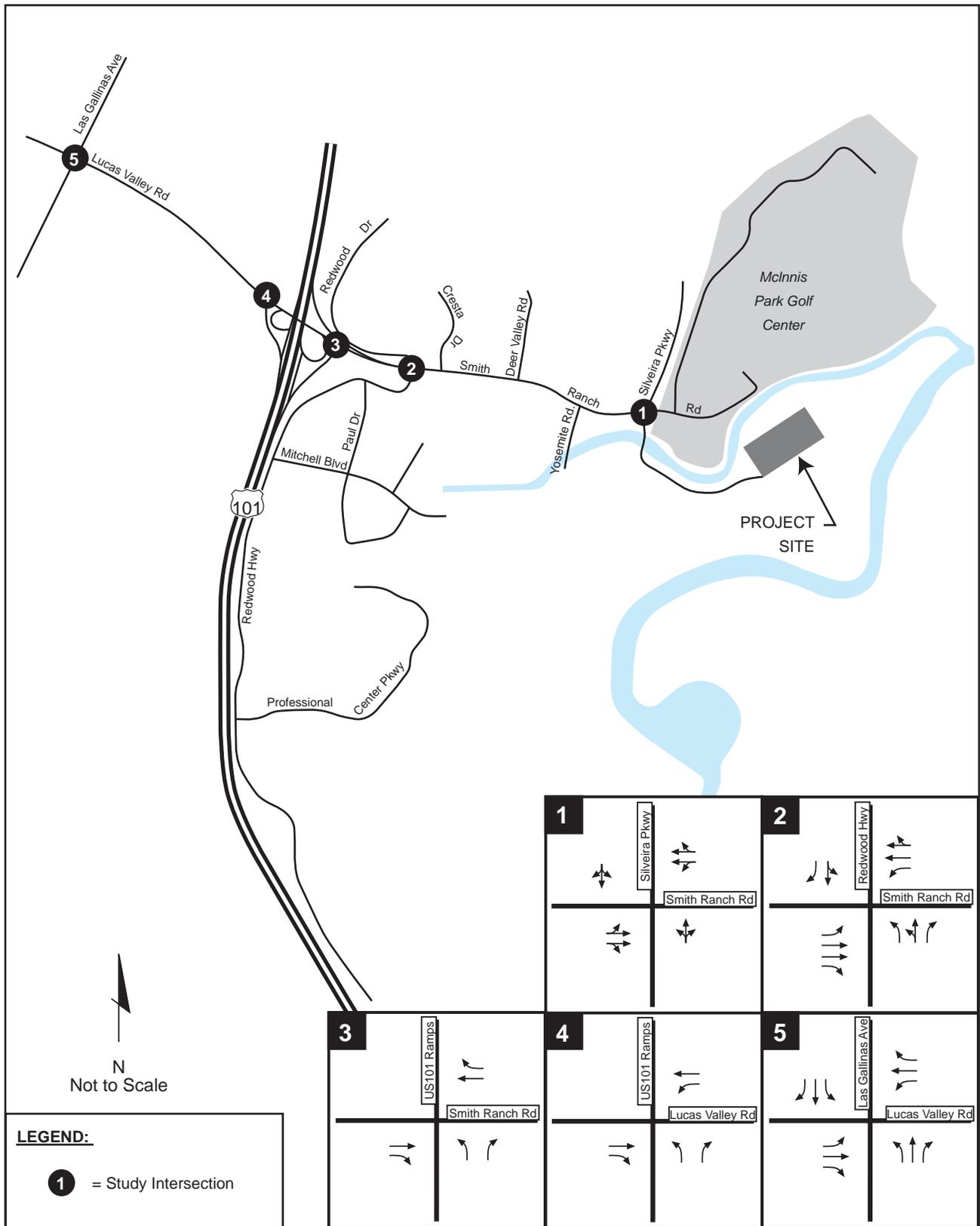


Figure 13-2
Baseline Lane Configurations



Source: Fehr & Peers

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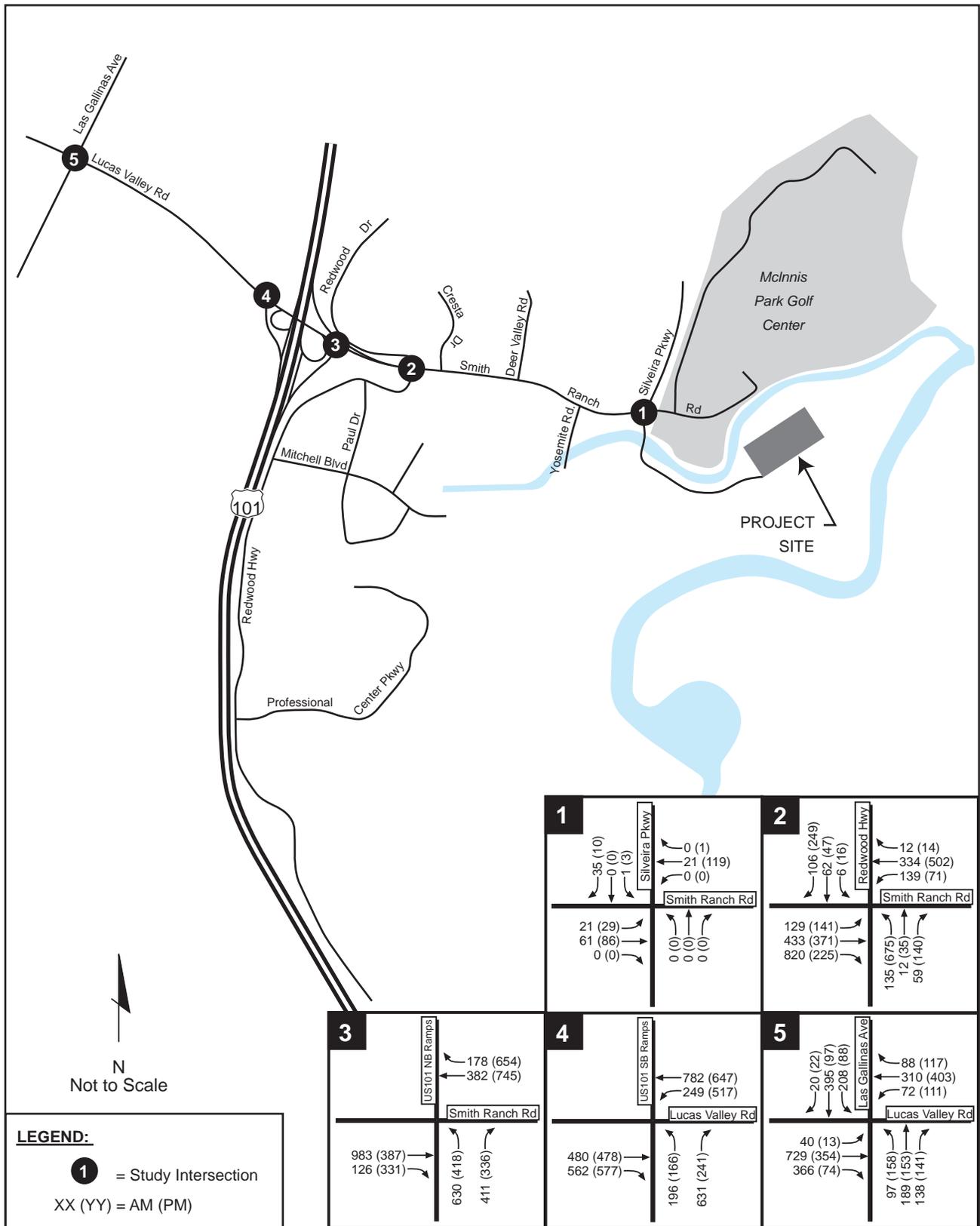


Figure 13-3
 Baseline Peak Hour Traffic Volumes



Source: Fehr & Peers

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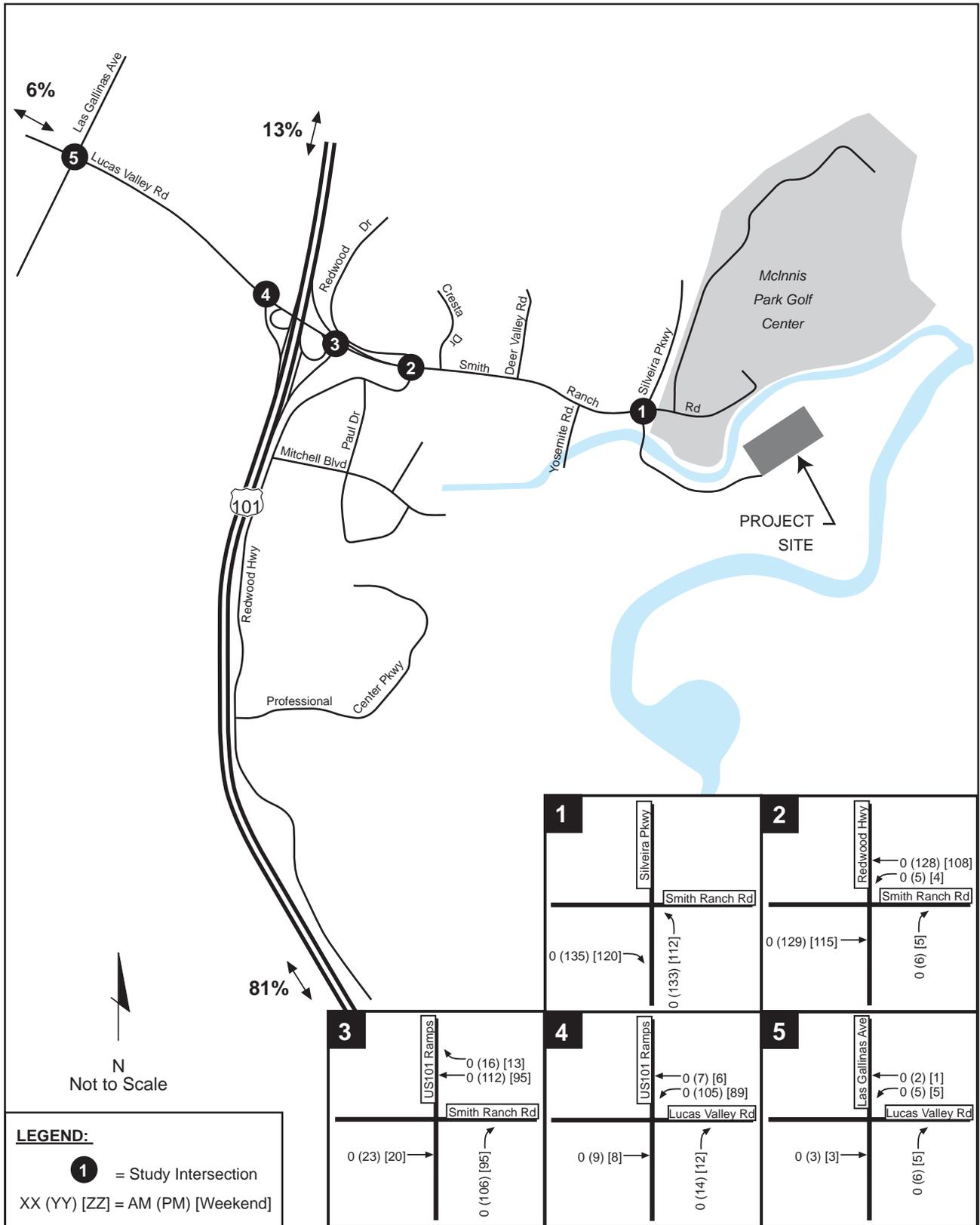


Figure 13-4
 Peak Hour Project Trip Assignment and Distribution



Source: Fehr & Peers

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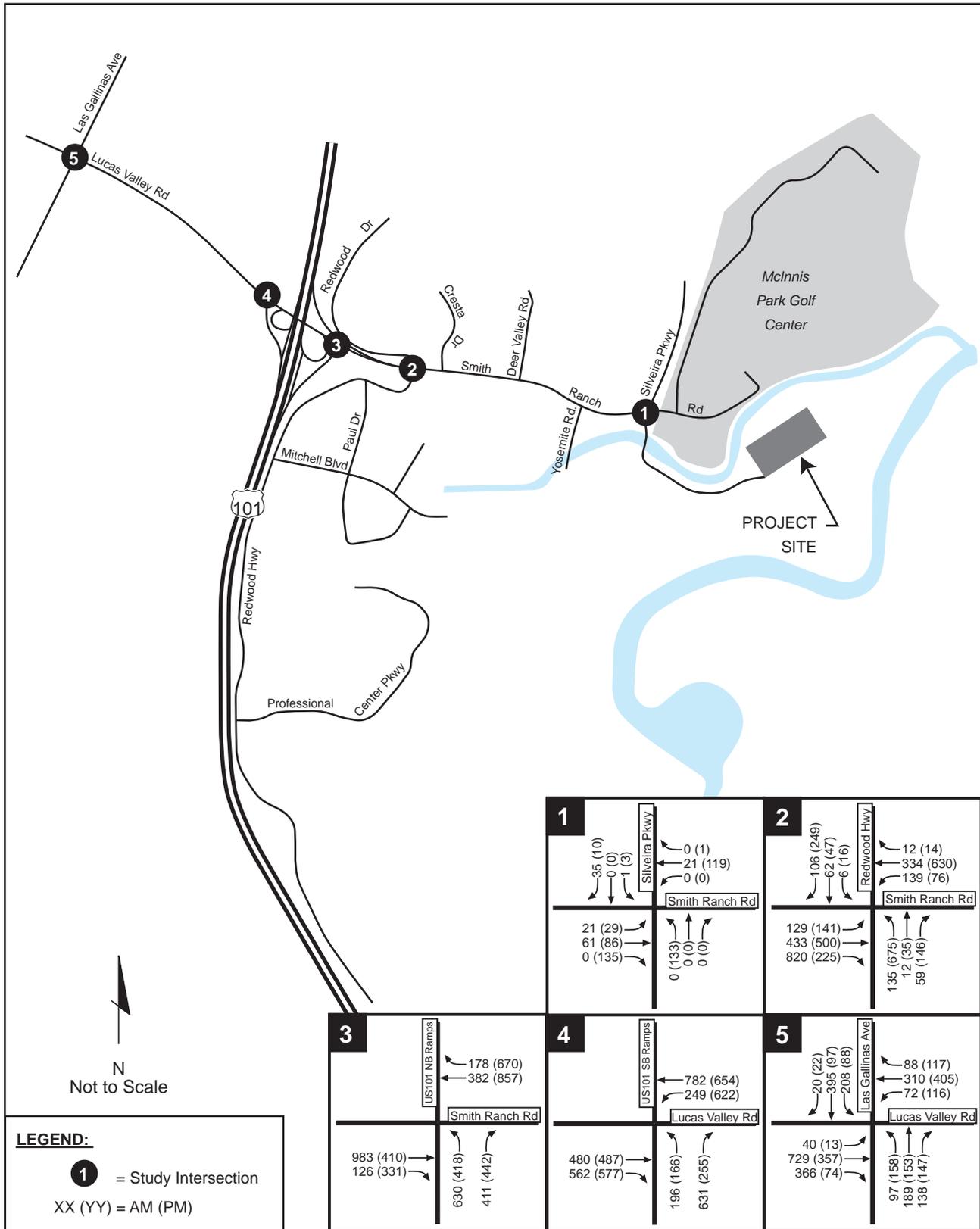


Figure 13-5
 Baseline with Project Peak Hour Volumes



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REGULATORY SETTING

TRANSPORTATION AUTHORITY OF MARIN / CONGESTION MANAGEMENT AGENCY

The Transportation Authority of Marin (TAM) has been designated as the Marin Congestion Management Agency (CMA), which is a Joint Powers Agency established between the County and cities to address Marin's unique transportation issues and to fulfill the legislative requirements of Propositions 111 and 116, approved in June 1990.

CITY OF SAN RAFAEL GENERAL PLAN 2020

The City of San Rafael *General Plan 2020* Circulation Element contains policies related to transportation, parking, bicycle & pedestrian issues, and transit that apply to the proposed Project. The General Plan also includes level of service standards for both signalized intersections and arterials.

Circulation Element

Goal 13: Mobility for All Users. It is the goal of San Rafael to have a diversified, cost-effective and resource efficient transportation network that provides mobility for all users.

C-4: Safe Roadway Design. Design of roadways should be safe and convenient for motor vehicles, transit, bicycles and pedestrians. Place highest priority on safety. In order to maximize safety and multimodal mobility, the City Council may determine that an intersection is exempt from the applicable intersection level of service standard where it is determined that a circulation improvement is needed for public safety considerations, including bicycle and pedestrian safety, and/or transit use improvements.

C-4a: Street Pattern and Traffic Flow. Support efforts by the City Traffic Engineer to configure or re-configure street patterns so as to improve traffic flow and turning movements in balance with safety considerations and the desire not to widen roads.

C-4b: Street Design Criteria to Support Alternative Modes. Establish street design criteria to the extent permitted by State law to support alternative transportation modes to better meet user needs and minimize conflicts between competing modes.

C-4c: Appropriate LOS Standards. At the time City Council approves a roadway improvement and safety exemption from the applicable LOS standard, the appropriate LOS will be established for the intersection.

C-5: Traffic Level of Service Standards.

A. Intersection LOS. In order to ensure an effective roadway network, maintain adequate traffic levels of service (LOS) consistent with standards for signalized intersections in the A.M. and P.M. peak hours as shown below, except as provided for under (B) Arterial LOS.

B. Arterial LOS. The City Traffic Engineer may apply arterial level of service analysis as the primary method of analysis for any proposed development project. The City Traffic Engineer will make this determination based on intersection spacing and other characteristics of the roadway system where conditions are better predicted by arterial analysis. Where arterial LOS analysis is warranted, a proposed development must be consistent with the following arterial LOS standards [shown on Exhibit 20 of the Circulation element]. If an intersection LOS is above or below the standard, the project shall be considered consistent with this policy if the arterial LOS is within the standard. The project will not be deemed consistent with this policy if the arterial LOS fails to meet the standard.

When arterial level of service is applied as the primary method of analysis for a proposed project, the project shall be deemed to be consistent with this policy if it is demonstrated that the arterial LOS standards described below are met regardless of the intersection LOS, or the project shall be deemed to be inconsistent with this policy if the arterial LOS standards are not met regardless of the intersection LOS.

C-9: Access for Emergency Services. Provide safe routes for emergency vehicle access so that that emergency services can be delivered when Highway 101 or 580 are closed or congested with traffic.

C-9a: Highway Closures. Develop, and update as necessary, an emergency contingency plan that addresses highway closure events.

C-9b: Roadway Monitoring. Support local traffic monitoring and control approaches, such as closed-circuit cameras and high-tech traffic signal systems that can be used to relieve congestion around incident sites or support emergency vehicle access.

C-14: Transit Network. Encourage the continued development of a safe, efficient, and reliable regional and local transit network to provide convenient alternatives to driving.

Goal 16: Bikeways. It is the goal of San Rafael to have safe, convenient and attractive bikeways and amenities.

Goal 17: Pedestrian Paths. It is the goal of San Rafael to have safe, convenient and pleasurable pedestrian amenities.

Goal 18: Adequate Parking. It is the goal of San Rafael to provide parking that is adequate and accessible, with attention to good design.

Levels of Service

As provided above under *General Plan 2020 Circulation Element Policy C-5*, the *San Rafael General Plan 2020* establishes a citywide level of service standard of LOS D for all arterial roadways, except as identified on Exhibit 20 of the *General Plan 2020 Circulation Element*. *General Plan 2020 Circulation Element Policy C-5B*, provided above, states that the City Engineer may apply arterial level of service analysis as the primary method of analysis based on intersection spacing and other roadway characteristics where conditions are better predicted by arterial analysis. LOS D is the standard for all study arterial roadways in the vicinity of the Project; however, for this Project, arterial LOS analysis is a secondary method of analysis. For intersections, the *San Rafael General Plan 2020* establishes a citywide level of service standard of LOS D, except at the following:

LOS E

- Downtown
- Irwin Street and Grand Avenue between Second Street and Mission Avenue
- Andersen Drive and West Francisco Boulevard
- Andersen Drive and Bellam Boulevard
- Freitas at Civic Center/Redwood Highway
- Merrydale at Civic Center Drive

LOS F

- Mission Avenue and Irwin Street

CITY OF SAN RAFAEL MUNICIPAL CODE

Off-street Parking

The City's parking standards are provided in Title 14 of the San Rafael Municipal Code, Chapter 14.18, as follows:

14.18.040 Parking Requirements.

- A. Off-street parking shall be provided in accord with [Chart 14.18.040 of the San Rafael Municipal Code]. Where the specific use in question is not listed, the planning director shall determine if another similar use exists which may be used to select an appropriate parking standard. In order to make this determination, the planning director may require the submission of survey data from the applicant or collected by the planning department at the applicant's expense.
- B. The parking requirement for any specific use listed may be modified so as to provide adequate parking which is fair, equitable, logical and consistent with the intent of this chapter. Such modification shall be subject to review by the planning director and traffic engineer, and approval by the planning commission.
- C. For properties located within the downtown parking assessment district, see also Section 14.18.060, Downtown parking assessment district, for additional information on parking requirements.
- D. In addition to the off-street parking requirements listed below, off-street loading and unloading shall be provided for certain uses in accord with Section 14.18.050, Off-street loading and unloading.
- E. For properties in the downtown area, residential parking is not required to be covered.
- F. Off-street parking is not required for FAR increases up to ten percent (10%) of the building or seven hundred fifty (750) square feet, whichever is larger, as granted under Section 14.16.150(G)(2)(b).

IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance for measuring a project's impacts are based upon CEQA Guidelines, City of San Rafael General Plan, the *Highway Capacity Manual* (Transportation Research Board, 2000), and generally accepted standards for environmental documents prepared pursuant to CEQA. An impact to transportation and traffic is considered significant if implementation of the proposed Project would result in any of the following:

- The Project would cause an increase in traffic which is substantial in relation to the existing 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 ration on roads, or congestion at intersections);

- The Project would exceed, either individually or cumulatively, a level of service standard established by the County Congestion Management Agency;
- The Project would result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety;
- The Project would substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);
- The Project would result in inadequate emergency access;
- The Project would result in inadequate parking capacity; or
- The Project would conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

PROJECT IMPACTS AND MITIGATION MEASURES

Trip Generation, Trip Assignment and Level of Service

The San Rafael *General Plan 2020* defines the following as significant impacts with respect to signalized intersections, and roadway and arterial segments:

Signalized

- If a signalized intersection with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation with the addition of Project traffic
- If a signalized intersection with baseline traffic volumes is at an unacceptable LOS and Project traffic causes an increase in the delay of five seconds or more

Roadways and Arterial Segments

- If an arterial with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation with the addition of Project traffic.
- If an arterial with baseline traffic volumes is already at an unacceptable LOS and Project traffic causes a decrease in the calculated average travel speed of five miles per hour or more.

Unsignalized Intersections

The San Rafael *General Plan 2020* does not provide significance thresholds for unsignalized intersections. Therefore, this analysis utilizes the commonly accepted methodology provided in the *Highway Capacity Manual (2000)* as documented by the Transportation Research

Board. For the purposes of this analysis, a significant impact at an unsignalized intersection would be identified based on the following:

- If an unsignalized intersection with baseline traffic volumes is operating at an acceptable LOS (LOS A, B, C, D, or E) and deteriorates to an unacceptable operation (LOS F) with the addition of Project traffic.
- If an unsignalized intersection with baseline traffic volumes is already operating at LOS F and Project traffic causes an increase in the delay of five seconds or more.

Trip Generation

Table 13-3 shows the projected weekday daily and PM peak hour trip generation for the proposed recreational facility. As discussed in the introduction, the recreational facility will have scheduled classes and events during the weekend; therefore, **Table 13-3** includes the Project’s projected weekend peak hour trip generation. Additionally, the proposed facility would be closed during the A.M. peak hours of 7 a.m. to 9 a.m., therefore, there no A.M. peak hour trips would be generated by the Project. Trip generation for the proposed uses was calculated using data from the Institute of Transportation Engineers (ITE) Trip Generation (7th Edition), 2003, traffic count data collected by Fehr & Peers at the comparably sized Mega Gymnastics located at 72 Woodland Avenue in San Rafael, and conversations with representatives from Sports City, the soccer complex operator.

Table 13-3
Project Vehicle Trip Generation

Land Use	Size (ksf)	Daily		PM Peak Hour			Weekend Peak Hour		
		Weekday Rate	Total Trips	Total Trips Weekday	In	Out	Total Trips Weekend	In	Out
Dance Studio ¹	12.4	44.3	549	62	35	27	62	35	27
Soccer Complex ²	58.8	32 per indoor game	792	120	60	60	150	75	75
Indoor Fields ¹		56 per outdoor game							
Outdoor Field Gymnastics Facility ³	14.5	40 per class	360	86	40	46	20	10	10
Totals			1,701	268	135	133	232	120	112

¹ Daily and PM peak hour trip generation rates taken from ITE Trip Generation - Specialty Retail, which includes dance studios (IIE LU 814). All dance classes are to be scheduled after the AM peak hour.

² Daily games: 16 indoor, 5 outdoor

³ Based on counts from the Mega Gymnastics center and conversations with the owner
Source: ITE and Fehr & Peers, 2007

Dance Studio

Trip generation estimates for the dance studio were calculated using data from the Institute of Transportation Engineers (ITE) Trip Generation (7th Edition), 2003. The land use selected to represent the dance studio was Specialty Retail (ITE LU 814), which includes, among other things, dance studios. It is assumed that all dance classes would be scheduled after the AM peak hour. The Specialty Retail land use category did not have a weekend peak hour rate; therefore, to be conservative, the weekday PM peak hour rate was used as the weekend peak hour rate in the analysis.

Soccer Complex

The soccer complex would have two indoor fields, one outdoor field, and one warm-up field. The complex would facilitate up to 21 league soccer games on weekdays with start times between 3:30 and 11:10 PM, according to representatives from Sports City, the soccer complex operator. This includes up to 16 games on the indoor fields and up to 5 games on the outdoor field. The warm-up field would not be used for scheduled practices or games and would not generate additional traffic.

Six of the league soccer games would be scheduled during weekday afternoons, between 3:30 PM and 6:00 PM (indoor: two games at 4:00 PM and two games at 5:10 PM; outdoor: one game at 3:30 PM and one game at 5:10 PM). This schedule represents an increase in games from the original proposal. It is assumed that two indoor games would end and two indoor games would begin during the PM peak hour (16 trips per game ending and 16 trips per game beginning). It is assumed that one outdoor game would end and one outdoor game would begin during the PM peak hour (16 trips per game ending and 16 trips per game beginning). It is also assumed that one outdoor game would end and one outdoor game would begin during the PM peak hour (28 trips per game ending and 28 trips per game beginning). These PM peak hour assumptions represent the “worst-case” scenario.

Similar to the weekday peak hour, no more than three games could occur at one time during the weekend peak hour. However, based on consultation with representatives from Sports City, Fehr & Peers assumed peak hour weekend games would attract 25% more trips than peak hour weekday games. More parents typically attend the weekend soccer games, especially for the younger age groups, and some of these additional parents would carpool to the games with the participating child, while some would drive an additional vehicle.

Gymnastics Facility

This analysis is based on the scenario that Mega Gymnastics of San Rafael would relocate to the proposed San Rafael Airport recreational facility. Fehr & Peers collected trip generation counts at the existing gym on Tuesday, December 14, and Wednesday, December 15, 2004, from 4:00 to 6:00 PM. These counts showed that the Mega Gymnastics facility generated an

average of 86 trips in the PM peak hour (4:00-5:00 PM). It should be noted that a large portion of the PM peak hour trips were pick-up/drop-offs.

Since it is expected that the class schedule and size of the programs to be similar to those of the existing gym, we also expect the relocated gym to generate 86 trips in the PM peak hour. The traffic using the relocated gymnastics facility would not be new traffic to the overall transportation network, but would be shifted from the current facility to the new site.

Fehr & Peers did not collect weekend trip generation counts at the existing gym; however, the Mega Gymnastics owner indicated there are fewer classes on the weekend than the weekdays. These classes are designed for young children and typically do not have class sizes larger than 10 students. Given the smaller class size and the smaller amount of classes, the owner estimated the weekend peak hour traffic is between 15 and 20 vehicles. Fehr & Peers choose 20 vehicles for the estimated weekend peak hour traffic for this analysis.

Trip Distribution and Assignment

Figure 13-4 shows the trip distribution and project trip assignment for the Project. The trip distribution assumptions were developed based on Census 2000 Data.

Intersections and Arterial Operations

As described above in the Existing Setting section of this chapter, the City typically evaluates traffic impacts with respect to intersection LOS; however, when the intersections and roadways in a study area exhibit certain characteristics, the LOS for an arterial segment is the primary method of analysis for traffic impacts. The analysis provided below utilizes both the intersection and arterial segment thresholds to determine the potential level of impact for the proposed Project.

Traffic conditions in the study area would remain unchanged during the AM peak period. The proposed Project is a recreational development that would be used after the AM peak period (7:00 to 9:00 AM). The AM peak hour trip generation of the proposed Project is expected to be negligible.

An illustration showing the baseline conditions with Project trips can be seen on **Figure 13-5**. The City's significance thresholds for intersections are provided at the beginning of this analysis. If a signalized or unsignalized intersection with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation with the addition of Project traffic, then a significant impact would occur. If a signalized or unsignalized intersection with baseline traffic volumes is at an unacceptable LOS and Project traffic causes an increase in the delay of five seconds or more, then a significant impact would occur. The Citywide significance threshold for signalized intersections established by the *San Rafael General Plan 2020* is LOS D. The significance threshold utilized in this

analysis for unsignalized intersections, as provided in the *Highway Capacity Manual (2000)*, is LOS F.

All five Project study intersections are projected to continue to operate at the same LOS as baseline during the PM peak hour with the addition of Project traffic. As shown in **Table 13-4**, none of these study intersections operate at an unacceptable LOS in baseline conditions, and the addition of Project traffic would not reduce the LOS of these intersections to an unacceptable level. Therefore, traffic from the proposed Project would result in a *less than significant* impact on the LOS of study intersections.

With the exception of westbound Smith Ranch Road, all arterial operations are projected to continue to operate at the same LOS as the baseline conditions during the PM peak hour, as shown in **Table 13-5**. The City's significance thresholds for arterial segments are provided at the beginning of this analysis. If an arterial segment with baseline traffic volumes is operating at an acceptable LOS and deteriorates to an unacceptable operation with the addition of Project traffic, then a significant impact would occur. If an arterial segment with baseline traffic volumes is already at an unacceptable LOS and Project traffic causes an increase in the delay of five seconds or more, then a significant impact would occur. The arterial operations at westbound Smith Ranch Road during the PM peak are projected to deteriorate from LOS D to LOS E with the addition of Project traffic. However, the Project would only reduce the overall speed on this arterial segment by 2.8 miles per hour from current baseline conditions, and as discussed above, arterial analysis was not the primary LOS analysis method used to determine Project impacts on roadway performance. The intersections associated with this arterial—Redwood Highway & Smith Ranch Road and US-101 Ramps & Smith Ranch Road—would continue operating at acceptable levels of service; therefore, the impact is deemed less than significant.

At the request of the City, all-way stop and signal warrant analysis was performed at two unsignalized intersections, Silveira Parkway and Smith Ranch Road and Yosemite Road and Smith Ranch Road. Neither met any of the warrants. The full warrant analysis is presented in the traffic impact analysis in **Appendix K**.

Table 13-4
Baseline and Baseline with Project Conditions
Intersection Delay and LOS Summary

ID	Intersection	Time Period	Baseline		Baseline + Project	
			LOS	Delay	LOS	Delay
1	Silveira Parkway & Smith Ranch Road	AM	A	3.3 ¹	A	3.3 ¹
		PM	A	1.4 ¹	A	4.3 ¹
2	Redwood Highway & Smith Ranch Road	AM	B	12.3	B	12.3
		PM	C	24.3	C	28.3
3	US-101 Ramps & Smith Ranch Road	AM	D	51.6	D	51.6
		PM	B	10.1	B	14.5
4	US-101 Ramps & Lucas Valley Road	AM	B	13.9	B	13.9
		PM	C	21.7	C	32.4
5	Las Gallinas Ave. & Lucas Valley Road	AM	C	34.4	C	34.4
		PM	B	19.3	B	19.4

¹Worst approach is noted for side street stop controlled intersections; **Bold** denotes unacceptable level of service
Source: City of San Rafael

Table 13-5
Baseline and Baseline with Project Conditions
Arterial Speed and LOS Summary

ID	Arterial	Time Period	Baseline		Baseline + Project	
			LOS	Speed	LOS	Speed
1	Smith Ranch Road EB	AM	E	12	E	12
		PM	D	15	D	14.8
2	Smith Ranch Road WB	AM	C	18.6	C	18.6
		PM	D	14.4	E	11.6
3	Lucas Valley Road EB	AM	D	17.9	D	17.9
		PM	D	19.8	D	19.3
4	Lucas Valley Road WB	AM	B	28.9	B	28.9
		PM	B	31	B	31

Source: City of San Rafael

As shown in the tables above, and as discussed in this analysis, traffic generated by the proposed Project would not result in significant impacts with respect to either the existing traffic load & capacity of the street system or level of service standards. Notwithstanding a few exceptions, the City has established an LOS standard of D for both signalized

intersections and roadway & arterial segments. Because the proposed Project is a recreational development, it would commence operation after the AM peak hour; therefore, the Project's contribution during this peak time would be negligible.

All five study intersections would operate at the same LOS as baseline conditions during the PM peak hour. Based on the analysis provided above, the trip generation of the proposed Project would not significantly reduce the LOS of either study roadways or study intersections. This impact is considered *less than significant*.

Design Hazards and Emergency Access

Impact Traf-1 Bridge Access. The analysis of the existing one-lane bridge determined that when groups of vehicles are entering or exiting at similar times, vehicles will need to wait for opposing traffic, resulting in short-term queuing at the bridge just before and after the dance and gymnastics classes. The traffic analysis determined that queuing would be minimal due to the short length of the bridge; however, without proper mitigation, the potential exists for queues to back onto Smith Ranch Road, the public right of way. This is considered a *potentially significant* impact.

Existing Railroad Crossing

The access approach to the Project site will cross an at-grade railroad crossing of the Sonoma-Marín Railroad right-of-way. The existing crossing is unmarked and shows little evidence of regular use. The existing crossing is considered to be adequate for the existing traffic. As demonstrated in this traffic analysis, Project traffic would not significantly decrease the LOS at any study intersections or arterial segments and no significant impacts related to trip generation would result. Overall traffic volumes generated by the Project would also be generally low, particularly during peak hours. The Project would not generate any AM peak hour traffic and a significant portion of Project operational traffic would occur between 5 p.m. and 10 p.m. on weekdays, which is later than any potential train would typically travel, therefore, there would be few potential conflicts with train crossings. As discussed below, City Traffic Engineers and the Fire Department have reviewed the site plan for adequacy regarding safety and emergency access and have determined that there are no potentially significant impacts.

Bridge Access

The access road to the recreational facility includes an existing 125 foot long, single lane bridge that crosses the North fork of Gallinas Creek. The City Traffic Engineer and Fire Department have both reviewed the existing facility and the existing and proposed new access to the new recreational facility and found the access to be safe and not pose any hazardous design features. The new roadway extension would provide two travel lanes, one in each direction, with a pedestrian/bicycle lane. The entire stretch of the new roadway was

checked for turning movements of single vehicles and single unit trucks and found to be adequate.^{2 3}

Although not required by the City, the Project description provided in Chapter 3 of this EIR explains that a new 25-foot wide steel truss bridge deck will be installed over the existing bridge that crosses the creek. The resulting bridge would accommodate two 10-foot wide vehicular travel lanes and one five-foot wide pedestrian/bicycle lane.

The Applicant's inclusion of the new bridge deck was not included in the Project description when the traffic analysis prepared for this Project was conducted. Therefore, the Fehr & Peers traffic analysis provided an assessment of whether Project traffic would create bottlenecks at the existing single-lane bridge, including excessive queuing back to the public right-of-way on Smith Ranch Road.

The analysis of the existing one-lane bridge determined that when groups of vehicles are entering or exiting at similar times, vehicles will need to wait for opposing traffic, resulting in short-term queuing at the bridge just before and after the dance and gymnastics classes. The traffic analysis determined that queuing would be minimal (163 ft. max.; approx. seven cars), due to the short length of the bridge (125 feet) but recommended mitigation that would establish the proper right-of-way and give a clear priority to drivers, which would reduce potential confusion and minimize the potential for queues to back onto Smith Ranch Road, the public right of way.

However, as discussed above, the Applicant now proposes to install a new bridge deck with two vehicular travel lanes and a pedestrian/bicycle lane (see **Figure 13-9**). This eliminates the potential access impact identified in the traffic study for a one-lane bridge and negates the need for additional mitigation. If at some point the Applicant decides to eliminate the bridge deck replacement from the overall Project, the effects of allowing the bridge to remain one-lane have been analyzed and can be successfully mitigated to a less than significant level. For the purposes of this analysis, however, the decision to replace the existing bridge is not yet confirmed; therefore, in the event that the Applicant does not replace the bridge, this would be considered a *potentially significant* impact that can be mitigated to a less than significant level with the following mitigation measure.

Mitigation Measure

MM Traf-1 Traffic Management Plan. If the proposed two-lane bridge deck is not installed as a part of this Project, the Applicant shall prepare and submit to

² Nader Mansourian, City Traffic Engineer, Interdepartmental Memorandum, *San Rafael Airport Recreation Facility Project*, March 29, 2005.

³ Keith J. Schoenthal, Fire Marshal, San Rafael Fire Department, Memorandum, October 27, 2005.

the City for approval a traffic management plan for events held at the facility in order to ensure adequate queuing and pedestrian safety occurs.

Resulting level of significance

In the event that the proposed two-lane bridge deck is not installed as part of the Project, implementation of **MM Traf-1** will ensure that the potential impacts resulting from traffic queuing at the existing single-lane bridge remain *less than significant*.

Parking

Because the uses contained within this facility are relatively unique, only limited parking demand data is available for the included land uses. The parking recommendations are based on information from the proposed tenants, anecdotal observations, and parking codes from other jurisdictions. Based on this information, the Project traffic analysis recommends that 222 parking spaces be provided as part of the proposed Project.⁴ While there are inherent uncertainties in this information, the Project does contain 48 surplus parking spaces to accommodate any larger than expected parking demand.

The parking recommendations assume that the peak demand for parking would occur on weekends when the gymnastics studio, the dance studio, and the soccer complex have their peak demands simultaneously. This is a realistic assumption based on the information provided by the various tenants. The parking analysis was evaluated by the City Traffic Engineer and found to be reasonable and adequate for the proposed type and mixture of recreational uses.⁵ **Table 13-6** shows the recommended allocation of parking spaces to each land use. The Project site plan calls for the construction of 270 parking spaces and a sizable pick-up/drop-off area, which should be more than adequate to serve the peak parking demand along with any overflow parking. **Figure 13-6** illustrates the proposed parking layout. The following text describes the assumptions used to develop the parking recommendations for each land use.

⁴ Fehr & Peers, *San Rafael Recreational Facility Transportation Impact Report*, September 2007, p. 19

⁵ Nader Mansourian, March 29, 2005.

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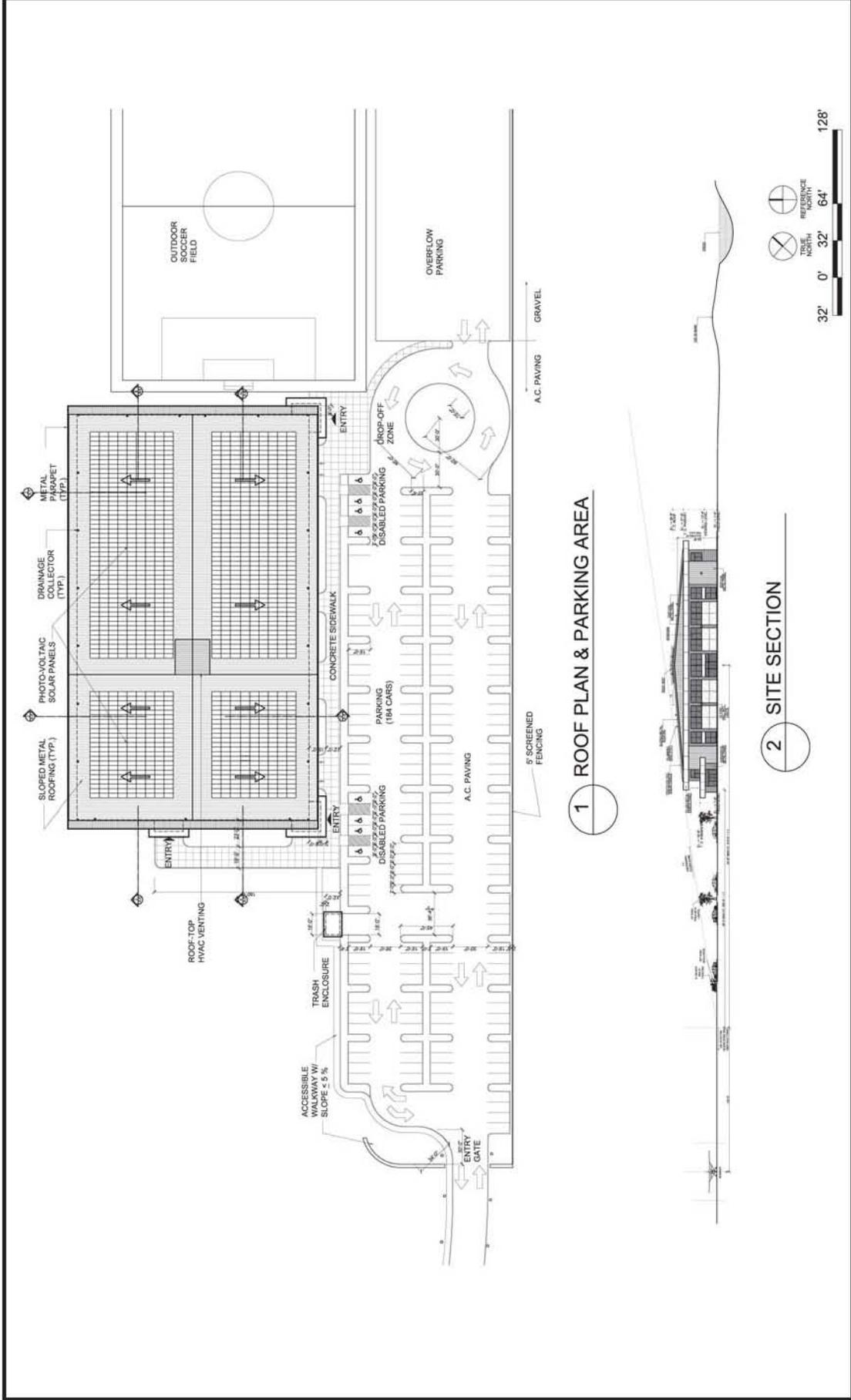


Figure 13-6
Parking Layout



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Table 13-6
Parking Requirements, Demand and Proposed Supply

Land Use	Size	Parking Spaces*
Gymnastics Studio	14,500	48
Dance Studio	12,400	52
Soccer Complex	58,800	122
Total	85,700	222
Provided	85,700	270*
		*222 + 48 surplus
Source: Fehr & Peers, 2007		

Gymnastics Studio

The reference Parking Standards (American Planning Association, 2002) reports typical jurisdictional parking codes for various land use types. This reference reports a minimum jurisdictional parking code requirement of 1 space per 300 square feet for a gymnastics school. Using this guideline, 48 spaces should be provided for the 14,500 square foot gymnastics facility. Parking codes tend to be conservative so the recommended number of spaces may be more than needed, but without actual parking surveys, this is the best available data. Observations at the Mega Gymnastics facility at 72 Woodland Avenue in San Rafael in December, 2005 showed a high rate of pick-ups and drop-offs at this single-use facility. The Project sponsor expects a lower rate of pick-up and drop-off traffic at the proposed facility because it is multi-use and includes a café and observation deck where parents can comfortably pass the time during the kids' activities. The proposed facility does contain a sizable pick-up/drop-off area.

Dance Studio

Parking Standards (American Planning Association, 2002) reports an average jurisdictional parking code requirement of 1 space per 240 square feet for a gymnastics school. Using this guideline we recommend 52 spaces be provided for the 12,400 square foot dance studio.

Soccer Complex

Whitlock & Weinberger Transportation, Inc. (W-Trans) conducted a parking survey at indoor soccer facilities in Santa Rosa and Cotati that are owned and operated by Sports City, the proposed soccer complex tenant. At these facilities, the peak average hourly parking demand occurred between 11:00 AM — 12:00 PM on weekends and was 65 spaces, for two indoor soccer fields, or 32.5 spaces per indoor field. Outdoor soccer fields generate 75% more peak hour trips than indoor fields, because the teams are larger, so we estimate the peak average

hourly parking demand for the outdoor field would be 57 spaces. Since the two indoor fields would generate demand for 65 spaces, the total demand would be 122 spaces.

Sports City expects the demand for soccer at the new soccer complex would be lower than the demand at the existing facility because Marin County has a smaller population (1/3-1/4 the number of residents as Sonoma) and fewer registered outdoor youth and adult soccer players (20,000 in Sonoma vs. 5,000 in Marin). However, the lower demand for soccer is not likely to reduce the peak parking demand since the facility would still hold two youth games indoors and one game outdoors concurrently at the new facility on weekend mornings. For this reason, 122 spaces should be provided for the soccer facilities' expected peak parking demand between 11:00 AM — 12:00 PM on weekends.

The Fehr & Peers traffic study prepared for the Project determined that it would generate a demand for 222 parking spaces on the Project site. As shown above in **Table 13-6**, as well as in **Figure 13-6**, the proposed Project will provide 270 parking spaces and a sizeable pick-up/drop-off area. This will be more than adequate to serve the peak parking demand along with any overflow parking. The Project would result in *no impact* regarding parking supply.

Alternative Transportation and transit

Transit Operations

There are *no foreseeable impacts* to the existing operations with the implementation of the proposed Project.

Bicycle and Pedestrian

A sidewalk will be added along the Project driveway from the building entrance to Smith Ranch Road, providing pedestrian access to the site. The City recommends a minimum width of six-feet as the standard; therefore, the proposed walkway to the facility may need to be widened to the extent feasible. As discussed above, the existing bridge deck across North Gallinas Creek is intended to be replaced with a new deck that will include two 10-foot wide vehicle travel lanes and a five-foot wide bicycle/pedestrian lane. Additionally, the four bicycle racks with capacity for 40-48 bicycles on site will encourage users to bicycle to the site. Therefore, there are *no foreseeable impacts* to the baseline operations with the implementation of the proposed Project.

Cumulative Impacts – General Plan 2020

In addition to evaluating the potential Project impacts to baseline traffic operations, this analysis examined the potential cumulative impacts to the study intersections. Acceptable LOS standards for intersections and arterial segments were analyzed as part of the General Plan EIR and incorporated into the *General Plan 2020*. These standards are discussed above. Based on the additional development that was modeled and incorporated into the *General*

Plan 2020 build-out, certain roadway improvements were identified as necessary to maintain acceptable LOS. Planned roadway improvements and the projected turning movements for year 2020 were compiled using the San Rafael *General Plan 2020* and information from the City of San Rafael staff.

Planned Roadway Improvements

The *San Rafael General Plan 2020* identifies proposed roadway improvements along Lucas Valley Road, just west of U.S. 101. The final *General Plan 2020* traffic improvement for this area is a new southbound US 101 ramp at Los Gamos Road, which will address currently deficient operations at the US 101 Ramps and Smith Ranch Road. Additionally, the *San Rafael General Plan 2020* proposes bike lanes along Smith Ranch Road and Silveira Parkway. The roadway improvements are funded through the payment of traffic mitigation fees. The Project would be required to pay these fees as a condition of Project approval.

Traffic Impacts

General Plan conditions (year 2020) peak hour traffic volumes for the study intersections come from the City of San Rafael's Traffic Model provided by City staff. **Figures 13-7** and **13-8** illustrate the General Plan and General Plan with Project traffic volumes. **Table 13-7** summarizes the results of the analysis of intersection operations expected for the year 2020. The table shows that all study intersections are expected to operate at LOS D or better under year 2020 conditions with and without the Project. Based on the significance criteria provided above, a Project would result in a significant traffic impact to an intersection if Project traffic would contribute to reducing its LOS from an acceptable level (LOS D in this area) to an unacceptable one; or if said intersection is already operating at an unacceptable level, a significant impact would occur if Project traffic added five (5) or more seconds of delay. However, as discussed above, based on *General Plan 2020: Circulation Element Policy C-5B*, the arterial LOS analysis is not the primary method of utilized in this analysis to determine traffic impacts. Although the westbound Smith Ranch Road arterial segment would deteriorate from LOS D to LOS E under General Plan + Project conditions, the intersections associated with this arterial—Redwood Highway & Smith Ranch Road and US-101 Ramps & Smith Ranch Road—would continue operating at acceptable levels of service. Based on this analysis, the development of this property is within the build-out scenarios analyzed by the General Plan EIR and therefore would not result in significant cumulative impacts.

Table 13-7
General Plan and General Plan + Project Conditions
Intersection Delay and LOS Summary

ID	Intersection	Time Period	General Plan		General Plan + Project	
			LOS	Delay	LOS	Delay
1	Silveira Parkway & Smith Ranch Road***	AM	A	2.4 ¹	A	2.4 ¹
		PM	A	2.0 ¹	A	5.2 ¹
2	Redwood Highway & Smith Ranch Road	AM	B	14.6	B	14.6
		PM	C	32.1	C	34.0
3	US-101 Ramps & Smith Ranch Road	AM	B	11.4	B	1.4
		PM	A	7.9	A	8.8
4	US-101 Ramps & Lucas Valley Road*	AM	-	-	-	-
		PM	-	-	-	-
5	Los Gamos Road & Lucas Valley Road**	AM	D	38.1	D	38.1
		PM	B	17.9	B	17.7
6	Las Gallinas Avenue & Lucas Valley Road	AM	D	43.0	D	43.0
		PM	C	23.1	C	23.2

¹Worst approach is noted for side street stop controlled intersections Source: Fehr & Peers, 2007

*Free movements & unsignalized in GP2020

**Unsignalized intersection in Baseline.

***Two-way Stop control intersection.

Table 13-8
General Plan And General Plan + Project Conditions
Arterial Speed And Los Summary

ID	Arterial	Time Period	General Plan		General Plan + Project	
			LOS	Speed	LOS	Speed
1	Smith Ranch Road EB	AM	C	22.1	C	22.1
		PM	C	20.2	C	19.1
2	Smith Ranch Road WB	AM	D	17.1	D	17.1
		PM	D	15.4	E	13.8
3	Lucas Valley Road EB	AM	E	13.7	E	13.7
		PM	D	20.9	D	20.9
4	Lucas Valley Road WB	AM	C	23.6	C	23.6
		PM	C	24.5	C	24.9

Source: Fehr & Peers, 2007

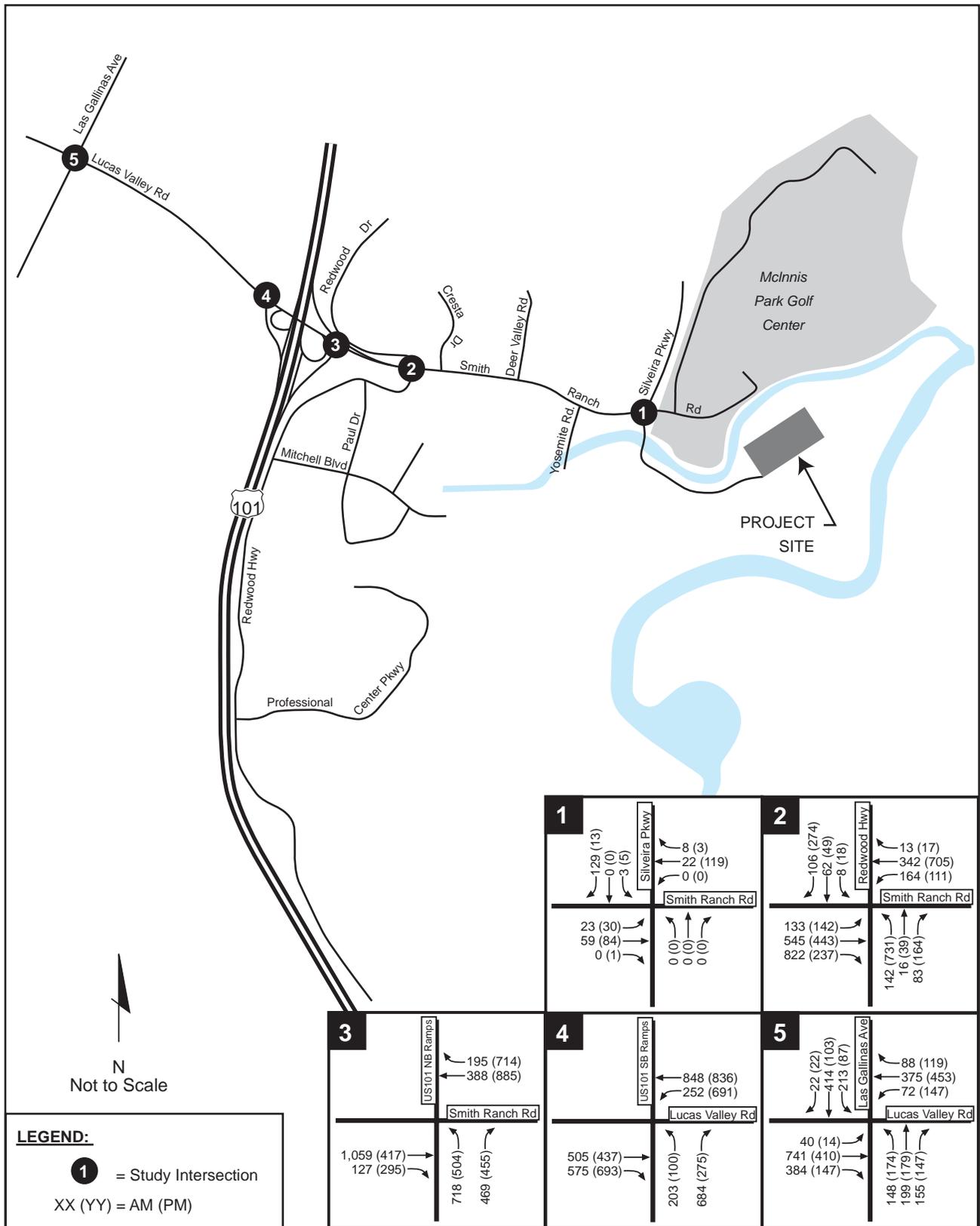


Figure 13-7
 2020 General Plan Peak Hour Traffic Volumes



Source: Fehr & Peers

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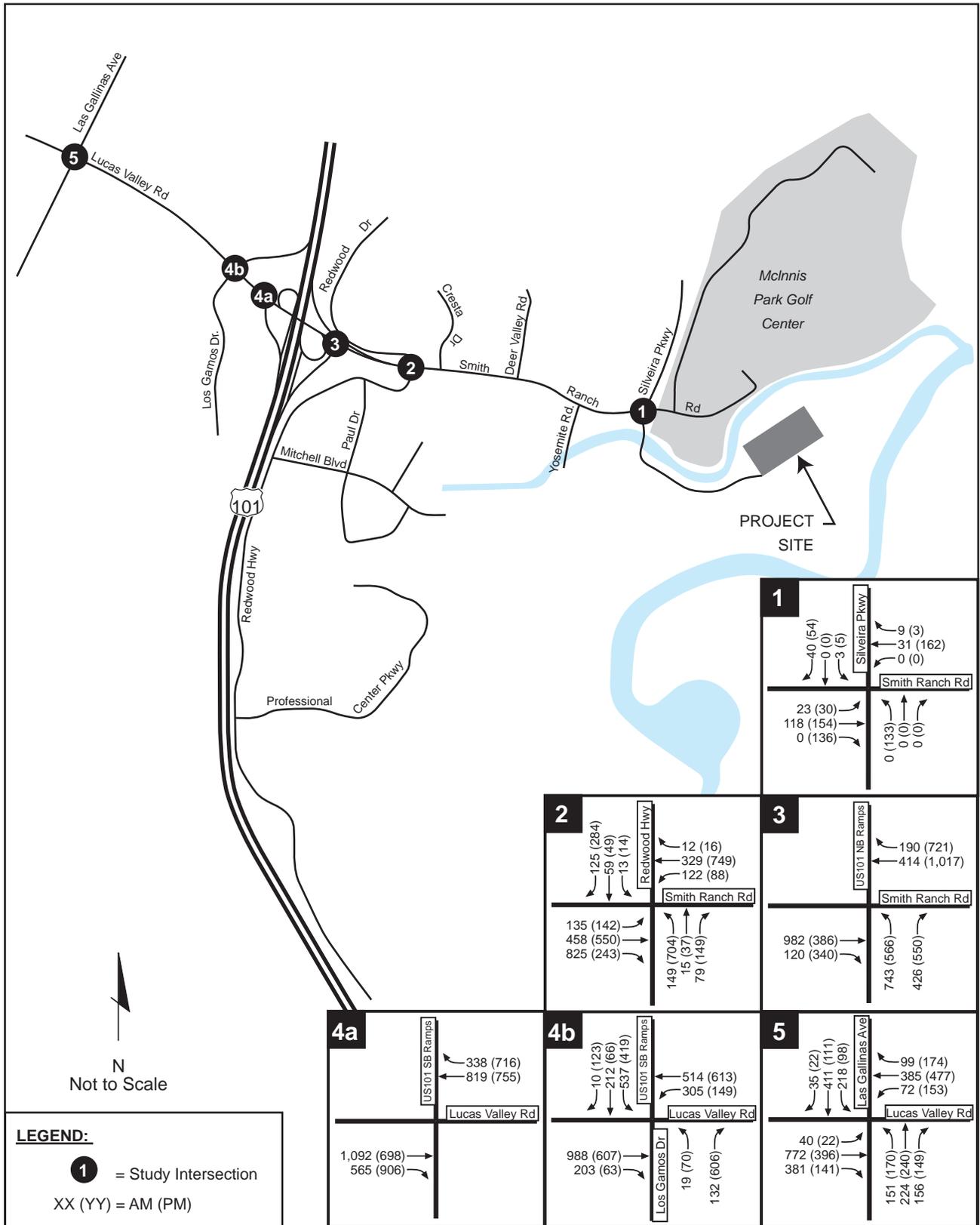
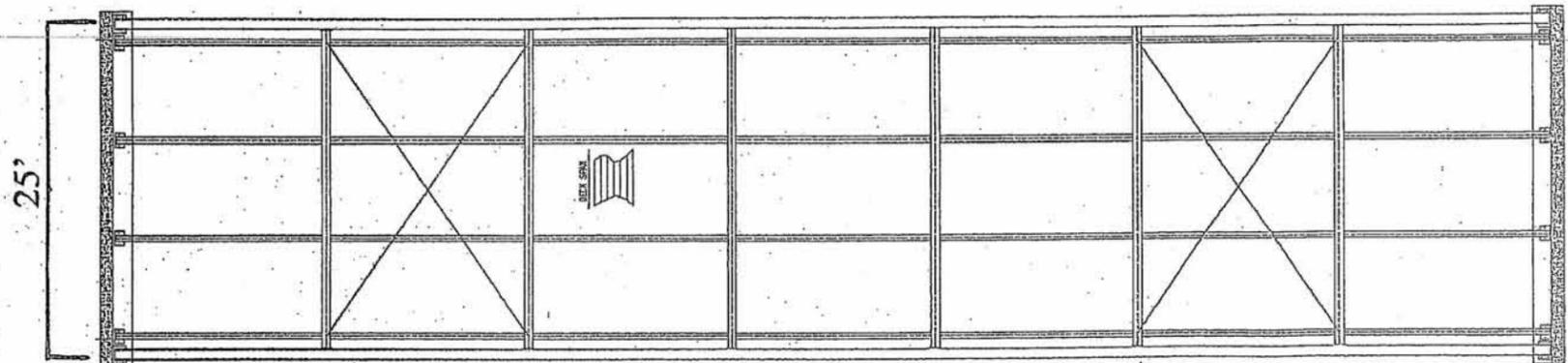
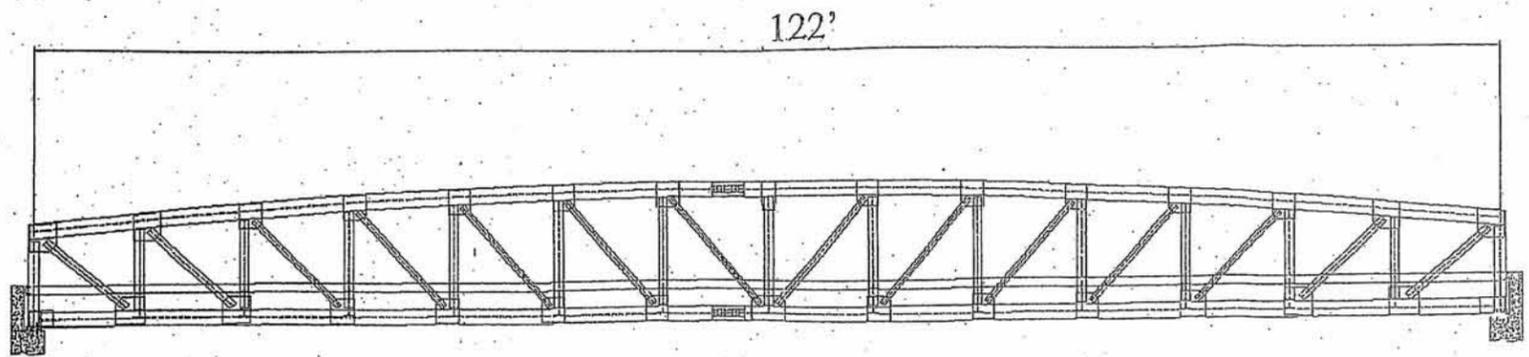


Figure 13-8
 2020 General Plan with Project
 Peak Hour Traffic Volumes



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CONSTRUCTION:

The proposed modular steel truss bridge deck is designed to meet highway load standards and will span Gallinas Creek without the need for driving any new piles within the creek bed or doing any other work within the creek bed. The modular bridge will rest on new concrete abutments to be located in the upland area on each side of the existing bridge. The bridge surface will be 8 inches of reinforced concrete over 22 gauge steel decking. Engineered shop drawings shall be prepared by a Professional Engineer registered with the State of California.

The rails of the existing bridge will be removed to make way for the new bridge deck. The new bridge deck will then be lowered via crane directly over the top of the existing bridge, and will rest and be supported by the new concrete abutments. The existing bridge structure will remain in place, and will be used as a platform to perform maintenance on the new bridge deck and to carry utility lines.

The new bridge deck will be 25 feet wide, which is slightly narrower than the existing bridge structure. A 5 foot wide handicap accessible sidewalk shall be provided, along with two 10 foot wide travel lanes. Horizontal hand rails shall meet UBC safety requirements. All exposed steel will have a Weathering Steel maintenance free finish that will provide a natural look in keeping with the creek environment in which it is located.



Vehicular Bridge Office
Phone: 866 294 9767
A CENTECH COMPANY

Preliminary Only - Not for Construction

This bridge is designed per AASHTO Standard Specifications for Highway Bridges.

Project: San Rafael Airport
Location: SAN RAFAEL, CALIFORNIA
Date: 7/25/2005

Figure 13-9
Proposed New Bridge Deck



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Transit Operations

The Project site and vicinity are served by Golden Gate Transit Route 75, located at the Park & Ride lot at Smith Ranch Road and Redwood Highway (US 101). There are no foreseeable impacts to the baseline operations with the implementation of the General Plan and the proposed Project.

Bicycle and Pedestrian Impacts

A sidewalk will be added to the Project, providing additional access for pedestrians entering the site. Otherwise, there are no foreseeable impacts to the cumulative conditions with the implementation of the General Plan and the proposed Project. Additionally, the General Plan proposes bike lanes along Smith Ranch Road and Silveira Parkway. The Project would not conflict with these plans.

Cumulative Impacts Conclusion

As discussed above, roadway improvements are funded through the payment of traffic mitigation fees, which the Project would be required to pay as a condition of Project approval. All developments projects that generate new A.M. or P.M. peak hour trips are subject to traffic mitigation fees. The current traffic mitigation fee is \$4,246 for every new A.M. or P.M. peak hour trip generated. The Project would be closed during the A.M. peak hour and would not generate any trips during that period; however, the Project would generate a total of 268 P.M. peak hour trips (135 in, 133 out); therefore, the Project's traffic mitigation fee would be \$1,137,926.

The proposed Project would not cause any study intersections to operate below LOS D under General Plan + Project conditions; there would be no foreseeable impacts to transit operations or bicycle or pedestrian use; and the Project would be required to pay the City's traffic mitigation fees as a condition of Project approval. Therefore, the Project's cumulative impacts under the General Plan 2020 conditions are determined to be *less than significant*.

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OTHER ENVIRONMENTAL EFFECTS

INTRODUCTION

This chapter of the EIR discusses those topic areas in which the Project would have no impact and those categories in which the Project's impacts would be mitigated to a level of less than significant by utilizing standard City procedures and regulations, program requirements, or design features as identified in this chapter as being incorporated into the Project. The chapter follows the form of an Environmental Checklist as shown in CEQA Guidelines, Appendix G. A "*no impact*" response indicates that the Project would not result in an environmental impact in a particular area of interest, either because the resource is not present, or the Project does not have the potential to cause an effect on the resource. A "*less than significant*" response indicates that, while there may be potential for an environmental impact, the significance of the impact would not exceed established thresholds and/or that there are standard procedures or regulations in place that would apply to the Project and hence no mitigation is required.

AGRICULTURAL RESOURCES

FARMLAND IMPACTS

Significance Criteria: The Project would have a significant environmental impact if it would result in the conversion of farmland to non-agricultural use, conflict with current zoning for agricultural use or the provisions of a current Williamson Act contract, or involve any environmental changes that could result in the conversion of farmland currently in agricultural uses to non-agricultural uses.

Neither the subject property nor surrounding properties are farmland. Therefore, development of this Project would not involve changes that could result in conversion of farmland to a non-agricultural use. Both Marin County and the City of San Rafael have permitted the airport use on this site since 1969. The proposed Project would be constructed on a site that for decades has been predominantly used as an airport with ancillary non-aviation commercial uses. No farming or agricultural uses have ever occurred on this site for over 40 years, and as such the proposed Project would not convert prime or unique farmland or farmland of statewide importance to non-agricultural uses. Agricultural activity on-site has

been limited to sheep grazing, which has been primarily implemented as a means of weed abatement. However, no portion of the site is actively farmed.

Because the proposed Project would not result in the conversion of farmland or land that is presently in agricultural use, does not conflict with current zoning for agricultural use or the provisions of a Williamson Act contract, or involve environmental changes that could lead to the conversion of land currently in agricultural use to a non-agricultural use, ***no impact*** would result.

MINERAL RESOURCES

SETTING

The California Division of Mines and Geology (CDMG) has classified lands within the San Francisco – Monterey Bay Region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974.

LOSS OF MINERAL RESOURCES

Significance Criteria: The Project would have a significant environmental impact if it were to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or if it were to result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

According to the City of San Rafael General Plan 2020, mineral resources in the San Rafael Planning Area are limited to non-metallic construction materials (such as gravel and stone). Only one rock quarry, the San Rafael Rock Quarry, located near Point San Pedro, remains active in San Rafael, although other quarries were formerly operated elsewhere in the City. The Project site is currently designated for Airport/Recreation uses and is not identified as a mineral resource area. ***No impacts*** would result.

POPULATION & HOUSING

SETTING

The Project site is located in a suburban, residential area. The Project site is designated in the San Rafael *General Plan 2020* as Airport/Recreation use and the zoning ordinance has zoned the site as Planned Development – Wetland Overlay (PD1764-WO) district, thereby targeting this area for growth and development of the type and use proposed under the Project.

POPULATION GROWTH

Significance Criteria: The Project would have a significant environmental impact if it were to induce either directly or indirectly substantial population growth.

The proposed Project would entail the development of an indoor and outdoor recreational facility, which the General Plan has accounted for, thereby making it an assumed use under the current City of San Rafael growth forecasts. A recreational facility by nature would not induce population growth, but rather serve the recreational needs of the population. The facility will also serve the greater community, which may include users from surrounding jurisdictions and unincorporated Marin County. However, this does not indicate an inducement in growth, as the users from the surrounding community that it attracts would otherwise find other existing recreational use destinations in the event that this Project is not approved. The facility would also serve future residents of both the City of San Rafael and the surrounding communities. Any future population growth not accounted for by the current General Plan would be required to be analyzed in a future update to the General Plan. Therefore, **no impacts** to population and housing would result.

DISPLACEMENT OF HOUSING OR PEOPLE

Significance Criteria: The Project would have a significant environmental impact if it would result in the displacement of substantial numbers of existing housing units or people living at the Project site.

There are no housing units on the portion of the site proposed for development. No housing would be displaced by this proposed Project, therefore **no impact** would result.

PUBLIC SERVICES

SETTING

The Project is located in the City of San Rafael, an incorporated City in Marin County. For the purposes of this section, the following significance criteria would hold for all impact assessments:

Significance Criteria: The Project would have a significant environmental impact if it were to result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks and recreational facilities, or other government facilities.

FIRE PROTECTION

The Project site is presently served by the San Rafael Fire Department and is within the Department's response zone. The nearest fire station is the Civic Center Station (Station #7) which is approximately 2.5 miles south of this site. The San Rafael Fire Department also participates in mutual aid agreements between neighboring Cities. The proposed recreational facility would be accessed through an extension to the existing private roadway serving the airport. The existing private driveway includes a bridge over the North Fork of the Gallinas Creek. Currently, this bridge only provides one lane of travel; although, the Project applicant proposes to replace the bridge deck with a wider one to provide two 10-foot wide travel lanes and one 5-foot wide bicycles/pedestrian lane.

As discussed in Chapter 13, Transportation and Traffic, the San Rafael Fire Department has reviewed the Project and determined that it can be serviced with the existing Fire Department facilities and staffing and there would be no need for new or altered facilities nor reduced minimum response times. In regards to the bridge widening, the Fire Department has determined that the widening of the bridge would be a beneficial upgrade, but is not a necessary improvement associated with the proposed Project since the existing bridge is adequate for their emergency vehicles to access the site and maintain response times.¹ For these reasons the impact fire services would be *less than significant*.

POLICE PROTECTION

The Project site is presently served by the San Rafael Police Department. As part of their review of this Project, the Police Department has reviewed the existing traffic conditions along Smith Ranch Road, calls for service to the existing County Park and areas along Smith Ranch Road and crime statistics for two other similar recreational facilities in other nearby communities.

In terms of existing traffic conditions, the Police Department reviewed the existing traffic conditions along Smith Ranch Road and the expected impact of the proposed recreational facility on Smith Ranch Road. It was found that Smith Ranch Road is a low volume traffic roadway and does not experience significant peak hour effect into or out of any existing streets. A traffic speed trailer was placed on Smith Ranch Road earlier this year, and found that this location does not have a significant amount of speeding and exhibits far less incidents of speeding than other areas of the City. Since 2003, traffic related calls for service calls have resulted in 15 traffic collision reports and 23 citations (for speeding, seatbelt violation and failure to yield).

With regard to calls for service at the existing McInnis Park, the Police Department has consulted with the Marin County Sheriff's Office. A review of their data found that the

¹ Keith J. Schoenthal, Fire Marshal, San Rafael Fire Department, Memorandum, October 27, 2005.

average response time to this area from the Sheriff's Department averages 7.46 minutes. The Sheriff's Department responded to 58 calls in 2003, 82 calls in 2004 and 82 calls as of October 31st of this year. These calls were primarily to assist other agencies including the CHP and probation, provide extra patrol at the park and juvenile disturbance at the park. The San Rafael Police Department's average response time to this area has been 8 minutes and over the past three years has responded to 155 calls in 2003, 146 calls in 2004 and 30 calls as of October 31 of this year. These calls were primarily for audible alarms, noise disturbances and assistance to other law enforcement agencies.

In order to better understand the proposed use and its potential impacts to police protection, the San Rafael Police Department consulted with the City of Santa Rosa Police Department and the Sonoma County Sheriff's Department, law enforcement agencies that currently provide police services to two other indoor soccer facilities operated by the same group proposing this facility. This consultation found that the Cotati location generated 8 calls for service in the past 12 months. Only two of these were directly related to the soccer facility and neither were considered a true problem by the Sonoma County Sheriff's Department. In regards to the Santa Rosa facility, this facility is a portion of a larger complex that has relatively low calls for service.

The proposed recreational facility would include a café on the mezzanine level, providing food services to users of the facility. The café is proposed to include the sale of alcohol (beer and wine only). In their review of the Project, the Police Department has also evaluated the potential impacts from the alcohol sales. As proposed, the sale of alcohol is not the primary component of the café and would be an ancillary service provided to patrons. The operator of the proposed soccer facility would also operate the café component. This operator currently has an alcohol license for beer and wine sales at their Santa Rosa facility and is applying for one at their Cotati site. A consultation with the California Department of Alcohol and Beverage Control (ABC) has found that the Santa Rosa facility has no disciplinary action in regards to their license. McInnis Park, the County Park bordering this site, has a restaurant and bar that includes an ABC license for beer, wine and distilled spirits. ABC has indicated that there has been no disciplinary action recorded against this license. In conclusion, the Police Department has found that as proposed, alcohol sales would be ancillary to the café (food service) use and with standard conditions of approval, would not pose an impact to police services. If this Project is approved, the standard conditions of approval would be included as part of the Master Use Permit and require that applicant maintain kitchen facility for the cooking of an assortment of foods, alcoholic beverages would only be sold for consumption on premises and only when served at stable or counters at the café, and alcohol sales shall constitute less than 51% of the food and beverage sales.

Based on this review, the City of San Rafael Police Department has indicated the proposed Project would not impact police services. They have recommended standard conditions of approval that are to be incorporated into the Project and would serve to prevent crime. Furthermore, the proposed recreational Project would be compatible with the existing

recreational facility that is located to the north of this site. The Police Department does not anticipate that the construction and operation of this Project would generate significant level of new calls for service and that the existing facilities and personnel would be adequate to service the new use. Therefore, the Project's impacts would be *less than significant*.

SCHOOLS

As discussed above, the proposed Project would entail the development of a recreational facility. Recreational facilities by nature do not induce population growth, but rather serve the recreational needs of the population and community. Therefore, the proposed Project would not create the need for new or altered school facilities. Furthermore, development of the proposed recreational facility would provide new state of the art recreational fields and opportunities for use by the school districts and school age children in the area. This would create a significant benefit to the schools and school age children in the County. Therefore, a *less than significant* impact would result.

PARKS

The proposed new recreational facility would create additional private recreational opportunities in San Rafael and Marin County in which they are greatly lacking. These facilities would be privately built and managed, but would be open to the general public. As documented in the Parks and Recreational Element of the General Plan, there is an existing deficiency in amount of parks and recreational opportunities within the City of San Rafael. The Parks and Recreation Element of the City of San Rafael's General Plan 2020 includes the following policies: a) PR-4 (City Recreational Needs) provide opportunities for recreational activities for boys and girls, teens, and adults through the creation of additional facilities such as fields for active sports; b) PR-13 (Commercial Recreation) which encourages private sector development of commercial facilities to serve community needs by encouraging commercial recreational facilities open to the general public; and c) PR-14 (Amateur Multi-Sport Athletic Fields) which strives for the development of publicly or privately funded, large multi-sport athletic field clusters to address the needs of the community. In the development of the General Plan 2020 and the background reports prepared for this process, the existing deficiency of adequate recreational opportunities was documented. This proposed Project would address the deficiency of recreational facilities of residents of both the City of San Rafael as well as residents county-wide by providing indoor recreational space for various recreational uses as well as additional outdoor fields with all weather surface.

The proposed Project was reviewed by the City of San Rafael's Parks and Recreation Commission at their July 21, 2005 meeting. The Commission found that: a) this proposed facility is consistent with the General Plan 2020 and meets the goals of the Recreation Element; b) the addition of this facility would provide a community benefit; c) the location of this facility is central and accessible to the public and the intensity, hours of operation and

types of uses are similar to that at McInnis Park that is located adjacent to this proposed facility; and d) even if these recreational uses are not commercially viable, other recreational uses can be accommodated in the proposed building.² The addition of this facility would have a positive impact on recreational offering in the City and therefore ***no impact*** would result.

OTHER PUBLIC FACILITIES

The City has not identified any issues related to the provision for other public facilities. Therefore, ***no impact*** would result.

RECREATION

Significance Criteria: The Project would have a significant environmental effect if it would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

See discussion above under “Parks.” Parks and recreational facilities are limited in Marin County and especially the City of San Rafael. As documented in the background report for the *General Plan 2020*, the surfaces of many playing fields throughout San Rafael have been overused for years without proper maintenance. This proposed Project would actually provide additional recreational opportunities where it is lacking and relieve the overuse of the existing facilities. Therefore, ***no impact*** would occur.

This proposed Project is a recreational facility in its entirety. The recreational use is the primary purpose of the proposed development. The potential impacts and physical effect on the environment as a result of the construction of this project have been discussed and analyzed throughout this EIR. Therefore, a ***less than significant*** impacts would result.

UTILITIES & SERVICES

REGIONAL WASTEWATER TREATMENT STANDARDS AND WASTE AND WASTEWATER TREATMENT FACILITIES

Significance Criteria: The Project would have a significant effect if it were to exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board or if it were to require or result in the construction of new water or wastewater treatment

² Carlene McCart, San Rafael Community Services, Memorandum, July 25, 2005.

facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

The proposed Project involves the construction of a new recreational facility that would be consistent with the General Plan land use designation adopted for this site. The Project would be subject to all wastewater requirements of the Regional Water Quality Board (RWQB). As standard condition of approval, the Project would provide adequate on-site drainage improvements and would require a Stormwater Pollution Prevention Plan to be prepared prior to construction. The recreational facility would be connected to the Las Gallinas Valley Sanitary District sewer facilities and this system has been identified to have sufficient capacity to serve the new recreational facility. ***Less than significant*** impacts would result.

The Marin Municipal Water District (MMWD) and Las Gallinas Valley Sanitary District provide water service and wastewater treatment, respectively, to this area. Water supplies and wastewater treatment capacity are adequate to serve the proposed recreational facility, therefore the Project would not require construction of new water or wastewater treatment facilities.³ ***No impacts*** would result.

STORM WATER DRAINAGE FACILITIES

Significance Criteria: The Project would have a significant effect if it were to require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

As discussed earlier under “Hydrology and Water Quality,” the existing storm drain system would have adequate capacity for the proposed development. Therefore, the Project would not require the construction of new or expanded storm water drainage facilities and ***no impact*** would result.

WATER SUPPLY

Significance Criteria: The Project would have a significant effect if it would be unable to secure sufficient water supplies available to serve the Project from existing entitlements and resources, necessitating new or expanded entitlements. Additionally, the Project would have a significant effect if it were to require or result in the construction of new water distribution facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

The subject site is currently not being served and no water has been allocated to this property. There is water service and entitlements for the portion of the 119.5-acre site that is the San Rafael Airport. According to the Marin Municipal Water District (MMWD), a

³ Marin Municipal Water District, Una Conkling, *RE: Water Availability*, Memo, July 25, 2005.

pipeline extension from the end of the District's existing facilities would be required prior to MMWD providing water service. MMWD has indicated that there is sufficient capacity in their system to serve this site.⁴ Upon completion and acceptance of the pipeline extension, the property would be eligible for water service. As mentioned in Chapter 3, Project Description, and discussed in Chapter 10, Hydrology, recycled water is also available via the Las Gallinas Sanitation District. The Applicant has not indicated that recycled water will be utilized at the Project. As discussed above, MMWD has indicated that there is sufficient capacity to serve the Project; therefore, recycled water is not required in order to mitigate a potentially significant environmental impact with respect to water supply. However, recycled water use is common in the North San Rafael area; therefore, although a *less than significant* impact would occur, it is recommended that the City require the incorporation of recycled water infrastructure and the appropriate use of recycled water on the Project site as a condition of Project approval.

WASTEWATER TREATMENT FACILITY CAPACITY

Significance Criteria: The Project would have a significant effect if it were to result in a determination by the wastewater treatment provider, which serves or may serve the Project that it would not have adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.

The Project site is not within the Las Gallinas Valley Sanitary District's boundaries, but is located within the district's Sphere of Influence. The existing airport use has an agreement with the Sanitary District for sanitary service for the site and the agreement allows a certain amount of allocation for sewer capacity. According to the Las Gallinas Sanitary District, the proposed addition of the recreational facility would be covered under the existing agreement for sanitary sewer services and would be within the capacity allocated under this agreement.⁵ The District has indicated that there is adequate sewer capacity to service the proposed project. Therefore, a *less than significant* impact would result. As discussed above, however, recycled water is also available via the Las Gallinas Sanitation District. Although the Applicant has not indicated that recycled water will be utilized at the Project, recycled water use is common in the North San Rafael area; therefore, as described above, it is recommended that the City require the incorporation of recycled water infrastructure and the appropriate use of recycled water on the Project site as a condition of Project approval.

⁴ Ibid.

⁵ Las Gallinas Valley Sanitary District, Al Petrie, *RE: Sewer Capacity*, Letters, March 18 & October 13, 2005.

SOLID WASTE DISPOSAL CAPACITY AND COMPLIANCE WITH SOLID WASTE REGULATIONS

Significance Criteria: The Project would have a significant effect if it were unable to be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs or if it did not comply with federal, state, and local statutes and regulations related to solid waste.

Redwood Sanitary Landfill would serve the Project. The landfill is currently approved for operations until 2039 and is currently well below maximum capacity. The projected solid waste from build-out of the Project site as Airport/Recreation (addressed in the City of San Rafael General Plan 2020 EIR) has been accounted for in the landfill maximum capacity determination. Furthermore, the waste generated by the proposed recreational use would represent a small percentage of the remaining capacity at the Redwood Landfill, and would not result in any violations of national, state or local standards. Solid waste impacts generated by on-site Project development (under worst-case conditions) would be *less than significant*.

The recreational use is consistent with the General Plan designation for the site. Furthermore, as proposed, the project would not create the need for any special solid waste disposal handling and would, therefore, comply with all solid waste statutes and regulations. *No impacts* would occur.

CUMULATIVE IMPACTS

Cumulative impacts are the result of combining the potential effects of the Project with other planned developments or anticipated community growth. The discussion considers the potentially significant impacts of the relevant environmental issue areas.

SETTING

The California Environmental Quality Act (CEQA) requires that an Environmental Impact Report (EIR) contain an assessment of the cumulative impacts that could be associated with the proposed project. According to CEQA Guidelines Section 15130(a), “an EIR shall discuss cumulative impacts of a project when the project’s incremental effect is cumulatively considerable.” “Cumulatively considerable” means that the incremental effects of an individual 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. As defined in CEQA Guidelines Section 15355, cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

Where a lead agency is examining a project with an incremental effect that is not “cumulatively considerable,” a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively

considerable. CEQA Guidelines Section 15130(a) also states the following with regard to cumulative impacts that are not significant:

- An EIR is not required to discuss impacts that do not result in part from the project evaluated in the EIR (Section 15130(a)(1)).
- When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR (Section 15130(a)(2)).
- An EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of mitigation measures designed to alleviate the cumulative impact (Section 15130(a)(3)).
- An EIR may determine that a project's contribution to a significant cumulative impact is de minimus and thus is not significant. A de minimus contribution means that the environmental conditions would essentially be the same whether or not the proposed project is implemented (Section 15130(a)(4)).

CEQA notes that the discussion of cumulative impacts should be guided by standards of practicality and reasonableness (CEQA Guidelines, 15130 (b)). As such, this analysis addresses impacts that might compound or interrelate with those of the proposed project.

The cumulative impacts analysis is based on use of both the long-term buildout projections as outlined in the San Rafael General Plan 2020 (General Plan 2020), and the projects listed in Table 14-1 (Cumulative Projects Considered) compiled by the City of San Rafael (City). This approach allows for better assessment of cumulative impacts associated with the proposed project. Analysis of cumulative impacts requires estimation in many cases, because specific quantification of impacts is not always possible, due to variations in the status and timing of projects and environmental conditions that may exist when cumulative projects are developed. While specific impacts of the following projects were not quantified, the General Plan 2020 EIR, which identified impacts of the buildout of the City, was prepared and certified as a Program EIR.

TABLE 14-1
CUMULATIVE PROJECTS CONSIDERED

Project Location/Name	Jurisdiction	Land Use	Approx. Distance from Project (miles)	Status
Cresta Drive (Marin Lofts)	San Rafael	Residential 15 Condominiums	Approx. 0.6 miles	Built
1600 Los Gamos Drive	San Rafael	Child care facility	Approx. 1.02 miles	Pending
400 Smith Ranch Rd	San Rafael	Multiple Use Permits for tenant changes (as required by Master Use Permit)	Approx 0.17 miles	Pending
280 Smith Ranch Rd	San Rafael	Roof mount wireless antennae facility	Approx 0.46 miles	Proposed
End of Prof Center Parkway (Northview)	San Rafael	28 unit single family subdivision	Approx. 0.75 miles	Built
5800 Northgate Mall Drive (Northgate Mall Renovation)	San Rafael	Renovation of the existing Northgate Mall	Approx. 1.3 miles	Under construction
100 Block of Lucas Valley Road (Jaleh Estates)	San Rafael	Four single family homes	Approx 1.15 miles	Proposed
Lucas Valley Road (Oakview)	County	28 res units and 150 senior assisted	Approx. 0.95 miles	Approved
Lucas Valley Road (Oakview Subdivision)	County	22 units	Approx. 1.25 miles	Under Review
St. Vincent's	County	Senior housing	Approx. 0.75 miles	Proposed

Notes: sq. ft = square feet

Sources:

City of San Rafael, Planning Department, Kraig Tambornini, Personal Communications, October 2008; City of San Rafael, Community Development Department, Current Project List, June 11, 2008; City of San Rafael, Website, Major New Development updated June 11 2008, http://www.cityofsanrafael.org/Government/Community_Development/Major_New_Development_Update.htm; County of Marin Prop Dev 43, updated January 1, 2008; City of San Rafael, General Plan 2020 Background Report Land Use Assumptions.

CUMULATIVE IMPACT SUMMARY

The proposed Project would not have impacts that are individually limited but cumulatively considerable. The mitigation measures provided in this EIR would address all of the potentially significant impacts for this Project.

Issue areas that typically have the potential to result in cumulative impacts include Air Quality, Biological Resources, Land Use, Population (and corresponding impacts to Housing, Public Services, and Utilities and Services), and Transportation and Traffic. However, no cumulative impacts were identified in these areas, and the potential impacts in these areas are

reduced to a less than significant level through implementation of mitigation measures provided throughout this EIR.

- Regarding Air Quality, the analysis in Chapter 5 of this EIR determined that the Project would not have significant cumulative impacts. The proposed Project is consistent with General Plan. And the City of San Rafael General Plan is consistent with the 1997 *Clean Air Plan* (the regional clean air plan). Projects that conform to General Plans in jurisdictions with General Plans that are consistent with the BAAQMD's *Clean Air Plan* would not have significant cumulative air quality impacts.
- Regarding Land Use, the Project is consistent with the site's land use and zoning designations and the Project site is within the City limits of San Rafael. Its use designation has, therefore, been analyzed by the EIR prepared to analyze the City of San Rafael *General Plan 2020*. The Project conforms to the airport's Master Use Permit and underlying restrictive covenants, which confine future uses to recreational or open space uses. As discussed above, the Project would attract users from throughout the County; however, it would not induce growth, per se, as users from outside the City would be considered to be existing users who would otherwise find alternate recreational use destinations in the event that this Project is not approved.
- Regarding Population (and associated issue areas), the proposed Project is not a housing project. The Project site is currently vacant and not designated for residential use; therefore, construction of the proposed Project would not displace current residents or prohibit future housing development opportunities. Moreover, the Project would be consistent with the General Plan. Consequently, there would be no cumulative impacts to population associated issue areas such as Housing, Public Services or Utilities and Services.
- Regarding Transportation and Traffic, the traffic analysis provided in Chapter 13 of this EIR determined that the Project would not cause any study intersections or arterial segments to operate below LOS D under General Plan + Project conditions and there would be no foreseeable impacts to transit operations or bicycle or pedestrian use. Roadway improvements are funded through the payment of traffic mitigation fees. The current traffic mitigation fee is \$4,246 for every new A.M. or P.M. peak hour trip generated. The Project would be closed during the A.M. peak hour and would not generate any trips during that period; however, the Project would generate a total of 268 P.M. peak hour trips (135 in, 133 out); therefore, the Project's traffic mitigation fee would be \$1,137,926. Based on the fact that Project traffic would not cause any study intersections or arterial segments to operate below LOS D under General Plan + Project conditions, and a condition of Project approval would require payment of the City's traffic mitigation fees, no cumulative impacts would be imposed on the area by the Project.
- Finally, in compliance with current State requirements, a Climate Change discussion has been added to this analysis in Chapter 15. Currently, no CEQA regulation or statute outlines how a CEQA analysis of a project's greenhouse gas emissions impact

should be performed. Draft guidelines for the analysis and mitigation of greenhouse gas emissions in CEQA documents will be submitted by the State Resources Agency to the State Office of Planning and Research by July 1, 2009. These guidelines are required by law to be adopted by January 1, 2010. In lieu of the fact that such guidelines have not yet been adopted, the climate change discussion in Chapter 15 represents the City's best effort to address this important issue given the most current information available.

Therefore, for the reasons discussed above, there are no significant cumulative impacts as a result of this Project.

GROWTH INDUCING IMPACTS

SETTING

As required by CEQA Guidelines Section 15126.2(d), an EIR must include a discussion of the ways in which a proposed project could directly or indirectly foster economic development or population growth, and how that growth would, in turn, affect the surrounding environment. Growth can be induced in a number of ways, including the elimination of obstacles to growth, or through the stimulation of economic activity within the region.

Direct growth-inducing impacts result when the development associated with a project directly induces population growth or the construction of additional developments within the same geographic area. These impacts may impose burdens on a community or encourage new local development, thereby triggering subsequent growth-related impacts. The analysis of potential growth-inducing impacts includes a determination of whether a project would remove physical obstacles to population growth. This often occurs with the extension of infrastructure facilities that can provide services to new development. Indirect growth-inducing impacts result from projects that serve as catalysts for future unrelated development in an area. Development of public institutions, such as colleges, and the introduction of employment opportunities within an area are examples of projects that may result in direct growth-inducing impacts.

ANALYSIS

The proposed Project site is located within the San Rafael City Limits and has General Plan and land use designations that are consistent with the proposed Project. The Project would not require the extension of services to a location beyond that which has been previously considered by the General Plan. Although the Project would attract users from throughout the County (and perhaps beyond), it would not induce growth, per se, as users from outside the City would be considered to be existing users who would otherwise find alternate recreational use destinations in the event that this Project is not approved. It is not likely that

the proposed Project in and of itself would attract new permanent residents to the City or region. Therefore, the proposed Project would not result in growth inducing impacts.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires an EIR to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance. In addition, Section 15093(a) of the CEQA Guidelines allows the decision-making agency to determine if the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. Alameda County can approve a project with unavoidable adverse impacts if it prepares a “Statement of Overriding Considerations” setting forth the specific reasons for making such a judgment.

This EIR has identified no Significant and Unavoidable effects of the Project.

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CLIMATE CHANGE

INTRODUCTION

No current CEQA regulation or statute outlines how CEQA analysis of a project's greenhouse gas emissions impact should be performed. In August 2007, the Senate passed SB 97 requiring the State Office of Planning and Research to prepare and submit guidelines to the State Resources Agency by July 1, 2009 for the analysis and mitigation of greenhouse gas emissions in CEQA documents. The Resources Agency must adopt the regulations by January 1, 2010. It is likely that these prospective Guidelines will provide needed guidance on significance criteria and how to reconcile AB 32 (the Global Warming Solutions Act) rollback provisions with CEQA's mandate that CEQA documents are not required to mitigate existing pre-project conditions. Until such time as Guidelines become available, the following analysis is the City's best effort to address this important issue given the current available information.

SETTING

Climate change is a shift in the average weather patterns observed on earth, which can be measured by such variables as temperature, wind patterns, storms and precipitation. The temperature on earth is regulated by what is commonly known as the "greenhouse effect." Naturally occurring greenhouse gases in the atmosphere, including carbon dioxide, methane, nitrous oxides, and water vapor, absorb heat from the earth's surface and radiate it back to the surface.

Human activities result in emissions of four principal greenhouse gases: carbon dioxide, methane, nitrous oxide, and halocarbons. Of all human activities, the burning of fossil fuels is the largest contributor in overall greenhouse gas emissions, releasing carbon dioxide gas into the atmosphere.¹

¹ Intergovernmental Panel on Climate Change, *Fourth Assessment Report (IPCC 4th)*, Working Group (WG) I, Frequently Asked Question 2.1, *How do Human Activities Contribute to Climate Change and How do They Compare with Natural Influences?* 2007.

Scientific studies indicate that increases in greenhouse gas emissions from human activities are leading to higher concentrations and a change in composition of the atmosphere. For instance, the concentration of CO₂ in the atmosphere has risen about 30 percent since the late 1800s. Many sources and models indicate that temperatures on earth are currently warming and will continue to warm at unprecedented levels. The global mean surface temperature has increased by 1.1° F since the 19th century, and the 10 warmest years of the last century all occurred within the last 15 years.²

The many effects of Greenhouse Gas Emissions (GGE) are still being researched and are not fully known, but are expected to include increased temperatures and severe weather conditions that would: reduce snowpack, a primary source of drinking water; exacerbate air quality problems and adversely impact human health by increasing heat stress and related deaths; increase the incidence of infectious disease, asthma and respiratory health problems; cause sea levels to rise, threatening urban and natural coastlands; increase pests and pathogens; and cause variations in crop quality and yields.

In California, the majority of human activity greenhouse gas emissions can be broken down into four sectors: transportation, industrial, electrical power, and agriculture/forestry. The largest source is from the transportation sector.³

In 2005, Governor Schwarzenegger issued Executive Order S-02-05, calling for statewide reductions of GGE to 2000 levels by 2010, 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. The Executive Order also called for the creation of a state “Climate Action Team”, which would report to the Governor every two years on both progress toward meeting the targets and effects of greenhouse gas emissions on the state.

In the Fall of 2006, the Governor signed Assembly Bill 32 (AB32), the “Global Warming Solutions Act of 2006,” committing the State of California to reducing greenhouse gas emissions to 1990 levels by 2020. The statute requires the California Air Resources Board (CARB) to track emissions through mandatory reporting, determine what 1990 emissions were, set annual emissions limits that will result in meeting the target, and identify a list of discrete early actions that directly address greenhouse gas emissions, are regulatory, and can be enforced by January 1, 2010.

The initial report of the Climate Action Team was published in March 2006. This report identifies recommended measures that account for a reduction of approximately 68 million metric tons of CO₂-equivalents (MMTCO₂E). In June 2007, the CARB approved the *Proposed Early Actions to Mitigate Climate Change in California* (April 20, 2007). In

² Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, March 2006.

³ Ibid.

September 2007 CARB published the *Draft Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*. The two CARB reports combined include 44 measures that are estimated to reduce greenhouse gas emissions by 42 MMTCO₂E. To achieve the 2020 target, California must reduce its emissions by 177 MMTCO₂E (CEC, 2006). The remaining reduction needed will come from a Scoping Plan due in late 2008 for public review, and adopted no later than January 1, 2009 by CARB.

Moreover, Governor Schwarzenegger signed [SB 97 \(Chapter 185, Statutes 2007\)](#) into law on August 24, 2007. The legislation provides partial guidance on how greenhouse gases should be addressed in certain CEQA documents.

SB 97 requires the Governor's Office of Planning and Research ("OPR") to prepare CEQA guidelines for the mitigation of GHG emissions, including, but not limited to, effects associated with transportation or energy consumption. OPR must prepare these guidelines and transmit them to the Resources Agency by July 1, 2009. The Resources Agency must then certify and adopt the guidelines by January 1, 2010. OPR and the Resources Agency are required to periodically review the guidelines to incorporate new information or criteria adopted by ARB pursuant to the Global Warming Solutions Act, scheduled for 2012.

The second part of SB 97 codifies safe harbor for highways and flood control projects. It provides that the failure of a CEQA document for a project funded by Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or the Disaster Preparedness and Flood Prevention Bond Act of 2006 to adequately analyze the effects of GHG emission otherwise required to be reduced pursuant to the regulations adopted under the Global Warming Solutions Act (which are not slated for adoption until January 1, 2012), does not create a cause of action for a violation of CEQA. This portion of SB 97 has a sunset date of January 1, 2010.

The bill does not address the obligation to analyze GHGs in projects not protected by the safe harbor provision. One possible interpretation is that there is no duty until the guidelines are adopted, because [CEQA Guidelines section 15007 subdivision \(b\)](#), provides that guideline amendments apply prospectively only.

Some of the measures identified in these documents have a direct relation to emissions at the project level. For example, in 2002 the State of California adopted a goal to achieve 20 percent of retail electricity sales from renewable energy sources by 2017, referred to as the Renewable Portfolio Standard (RPS). In 2003 the goal was accelerated to 2010. The RPS in 2006 was 13.2 percent. Therefore, electricity usage in 2010 would be approximately 7 percent cleaner. In 2005 the California Public Utilities Commission issued a draft final report, *Achieving a 33 Percent Renewable Energy Target*, which found a 33 percent RPS was economically and technologically feasible to achieve by 2020. If this goal is adopted it would further increase the amount of clean energy used for electricity. Other measures involve

increasing the efficiency of vehicles and vehicle fuels, planting trees in urban areas, and implementing Smart Land Use and Intelligent Transportation policies and programs.

REGULATORY SETTING

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The basic goal of the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 et seq.) is to develop and maintain a high-quality environment now and in the future, while the specific goals of CEQA are for California's public agencies to:

1. identify the significant environmental effects of their actions; and, either
2. avoid those significant environmental effects, where feasible; or
3. mitigate those significant environmental effects, where feasible.

CEQA applies to projects proposed to be undertaken or requiring approval by State and local government agencies subject to the jurisdiction of California. Projects are discretionary activities which have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits and the approval of tentative subdivision maps.

Although several local trial courts have ruled on CEQA cases concerning climate change, and a number of CEQA lawsuits have been filed by appellants including the California Attorney General, to date there are no California appellate or Supreme Court decisions governing the character or extent of climate change analysis required under CEQA. The CEQA Guidelines have not been updated to provide guidance as it relates to climate change.

CALIFORNIA ASSEMBLY BILL 32

AB 32 was signed into law by Governor Arnold Schwarzenegger on September 27, 2006. The bill is 13 pages in length, focuses on GHG emission reduction goals, and specifies which California agencies are responsible for meeting these goals. There are no new prescriptive air quality regulations in the bill requiring emissions reductions by sector or application. Rather, AB 32 is California's roadmap to GHG emission reduction by listing goals and timelines and giving new authority to existing agencies to meet these goals.

The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by the year 2020. The bill requires the California Air Resources Board (CARB) to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective ORG reductions, as specified. The following are the key milestones of AB 32.

- June 30, 2007—Identification of “discrete early action greenhouse gas emissions reduction measures”
- January 1, 2008—Identification of the 1990 baseline 01-10 emissions level and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions
- January 1, 2009—Adoption of a scoping plan for achieving GHG emission reductions
- January 1, 2010—Adoption and enforcement of regulations to implement the “discrete” actions
- January 1, 2011—Adoption of ORG emission limits and reduction measures by regulation
- January 1, 2012—GHG emission limits and reduction measures adopted in 2011 become enforceable

There is also specific language to support the use of AB 32 to abate other air quality issues, such as ozone, particulate matter, and toxic air contaminant exposures “to the extent feasible and in furtherance of achieving the statewide GHG emissions limit”

Until CARB finalizes the 1990 emission inventory, most policy makers are using the Climate Action Team Report submitted to the California Governor and Legislature in March 2006 for GHG inventory estimates.⁴ The draft GHG budget was recently presented by CARB on January 22, 2007. California needs to reduce GHG emissions by approximately 25% by the year 2020 to achieve the goals specified in AB 32. CO₂ represents approximately 83% of California’s GHG emissions. Lastly, the transportation sector is responsible for roughly 40% of GHG emissions, and electric power and industrial processing contribute approximately 20% each.

CITY OF SAN RAFAEL MUNICIPAL CODE

The City of San Rafael recently implemented a “Green Building Ordinance” (GBO), provided in Chapter 14 (Zoning Code) of the Municipal Code, which aims to encourage conservation, increase energy and water efficiency and reduce waste generated by construction projects. Implementation of this ordinance in development projects will further local, regional and state goals and mandates to reduce GHG emissions. This ordinance does not apply to the current Project, as its application was submitted and deemed complete prior

⁴ California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006, accessed: April 2008, Available at: http://www.climatechange.ca.gov/climate_action_team/index.html.

to the ordinances implementation. However, the impact discussion provided in this Chapter describes the additional measures the Project Applicant intends to implement in order to reduce its impacts in terms of GHG emissions. Many of these measures are consistent with the stated purpose of the City's Green Building Ordinance, as described below:

Zoning Code: 14.16.365 Green building.

- A. Purpose. The purpose of this section is to enhance the public health and welfare and assure that residential development is consistent with the city's desire to create a more sustainable community by incorporating green building measures into the design, construction and maintenance of buildings and appurtenant development. The green building practices referenced in this section are designed to achieve the following objectives:
1. Encourage resource conservation;
 2. Reduce waste generated by construction projects;
 3. Increase energy and water efficiency; and
 4. Promote the health of residents.
- B. Covered Projects. This section shall apply to:
2. The construction of new nonresidential buildings or additions to existing buildings which equal or exceed five thousand (5,000) square feet of conditioned floor area.
- C. Standards for Compliance. All covered projects shall demonstrate compliance with the rating system and minimum point requirements established by separate resolution of the city council, as amended from time to time.
- D. Documentation.
2. Nonresidential Projects.
 - a. Projects from Five Thousand (5,000) to Twenty-nine Thousand Nine Hundred Ninety-nine (29,999) Square Feet of Conditioned Floor Area. All applicants are required to retain the services of a LEED[®] accredited professional and submit a copy of the LEED[®] checklist and supporting documentation indicating compliance with the city's standards for compliance, signed by the project LEED[®] accredited professional prior to issuance of a building permit. All building documents shall indicate in the general notes and/or individual detail drawings, where feasible, the green building measures employed to attain the applicable LEED[®] rating.

- b. Projects Exceeding Twenty-nine Thousand Nine Hundred Ninety-nine (29,999) Square Feet of Conditioned Floor Area. Covered nonresidential projects shall follow the certifying and procedural requirements of the U.S. Green Building Council for the LEED[®] rating system used. All applicants are required to retain the services of a LEED[®] accredited professional and complete LEED[®] project registration prior to issuance of a building permit. Applicants shall submit proof of registration of the project with the U.S. Green Building Council and submit a copy of the LEED[®] checklist and supporting documentation indicating compliance with the city's standards for compliance, signed by the project LEED[®] accredited professional prior to issuance of a building permit. All building documents shall indicate in the general notes and/or individual detail drawings, where feasible, the green building measures employed to attain the applicable LEED[®] rating. The applicant shall also provide to the building official with online access to the U.S. Green Building Council website in order for the building official to monitor the submission of documents by the applicant to the U.S. Green Building Council. If the building official determines the project is no longer in compliance with the approved plans or that the applicant is not diligently pursuing LEED[®] certification by the U.S. Green Building Council, the building official may issue a stop work order.
 - c. The city council may, by resolution, adopt an alternative green building rating system than LEED[®].
- E. Review of Documentation. If the chief building official determines that the green building documentation fails to indicate that the project will conform to the standards for compliance, the documentation shall be returned to the applicant as incomplete, with an indication of additional information or project modifications that may be required for approval. A building permit, including a grading permit, shall not be issued until the submittal documentation has been approved.
- F. Verification.
2. Nonresidential Projects.
 - a. Projects from Five Thousand (5,000) to Twenty-nine Thousand Nine Hundred Ninety-nine (29,999) Square Feet of Conditioned Floor Area. A LEED[®] accredited professional shall verify that the green building measures indicated in the approved green building documentation have been implemented through inspections during the construction of the project or through review of purchase receipts or photographic documentation. At the completion of project construction, the LEED[®] accredited professional shall verify compliance with the approved green building documentation and the standards for compliance. During the verification process for the project, flexibility may be exercised by

substituting other allowable compliance measures. Substitution of measures must be approved by the chief building official by submittal and approval of a revised LEED® checklist by the LEED® accredited professional. An occupancy permit or final inspection approval for the construction project shall not be granted until the chief building official has determined that all required green building measures have been implemented. Certification through the U.S. Green Building Council is not required.

- b. Projects Exceeding Twenty-nine Thousand Nine Hundred Ninety-nine (29,999) Square Feet of Conditioned Floor Area. Prior to approval of a final inspection for any covered nonresidential project, the applicant shall demonstrate substantial completion of the LEED® documentation for the project as evidenced by accessing the online information of the project on the U.S. Green Building Council's website, following which the chief building official shall grant a conditional occupancy permit if all other requirements have been satisfied. Within one year of granting such conditional occupancy permit, the applicant (or current owner) shall submit satisfactory evidence of LEED® certification to the chief building official. Failure of the applicant to submit such evidence shall be a violation of this code, entitling the chief building official to revoke the conditional occupancy permit, require the vacancy of the building, and/or impose a civil penalty of five hundred dollars (\$500.00) per day against the applicant (or current owner) until such evidence of certification has been submitted.

G. Costs of Verification. The costs for verification of compliance with green building requirements, including the hiring of a certified green building rater or a LEED® accredited professional, shall be borne by applicants for building permits.

H. Exemptions.

1. This section shall not apply to:
 - a. Second dwelling units;
 - b. Civic facilities which are located within leased buildings; or
 - c. Any project which received and maintains a valid planning approval or a building permit or which has submitted a complete planning application or building permit application prior to the effective date of the ordinance unless otherwise required as a condition of approval of the planning application.
2. Hardship or Infeasibility Exemption. An exemption from the standards for compliance may be granted by the community development director under special circumstances. Such circumstances may include, but are not limited to: availability of green building materials and technology, conflict between green building

requirements with other building or zoning standards, or provision of alternate methods that provide greater resource conservation, energy conservation or resident health than adopted green building measures. The determination by the community development director shall be provided in writing to the applicant, with a revised green building rating calculator. The decision of the community development director may be appealed to the planning commission in compliance with the requirements of Chapter 14.28, Appeals. (Ord. 1853 § 2, 2007).

IMPACT ANALYSIS

THRESHOLDS OF SIGNIFICANCE

As of preparation of this Initial Study, there are no statutes, regulations, guidelines, or case law decisions requiring analysis of climate change within a CEQA document. Under AB 32, the CARB (the sole agency in charge of regulating sources of emissions of GHG in California) has been tasked with adopting regulations for reduction of GHG emissions. As of the date of this analysis, no air district in California (including BAAQMD) is known to have identified a significance threshold for GHG emissions or a methodology for analyzing air quality impacts related to GHG emissions. In particular, there is no emission rate criterion for the purpose of identifying a significant contribution to global climate change in CEQA documents.

CEQA Guidelines and the CEQA Initial Study Checklist do not contain any provisions that specifically set forth requirements for analysis of global climate change impacts in an Initial Study or Categorical Exemption. As stated in Section 15064(b) of the State CEQA Guidelines, “The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data.” Additionally, CEQA Guidelines Section 15145 states, “If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact.”

PROJECT IMPACTS AND MITIGATION MEASURES

The City of San Rafael has determined, based upon the discussion above and the factors discussed previously and summarized below, that the Project’s impact on global climate change is speculative, and cannot be evaluated at this time because of:

- Uncertainties regarding human activities and climate change and the potential human activities that may reverse global warming trends.
- Lack of guidance for analysis of climate change issues in CEQA documents.

- Lack of methodology for evaluating GHGs, specifically determining the incremental increase in GHG emissions for an individual project, the impacts of a particular development project on global climate change, and the significance of any such impacts under CEQA.
- Lack of methodology for determining whether GHG emissions from an individual project are significant.
- Lack of scientific basis to accurately project future climate trends, much less the likely adverse environmental impacts resulting from those trends in any specific location.

For all of the reasons summarized above, and pursuant to Section 15145 of the CEQA Guidelines, until such time as a sufficient scientific basis exists to 1) ascertain the incremental impact of an individual project on climate change, and to 2) accurately project future climate trends associated with that increment of change, and 3) guidance is provided by regulatory agencies on the control of GHG emissions and thresholds of significance, the significance of an individual project's contribution to global GHG emissions is too speculative to be determined. Therefore, further analysis and application of current emissions scenarios, climate models, and climate change projections to the proposed Project is also speculative.

While the preceding discussion outlines the speculative nature of determining the significance of an individual project's contribution to global GHG emissions at this time, the City of San Rafael has provided a discussion of the proposed Project below, for consideration by decision makers. Discussed below are the Project-related activities that could contribute to the generation of increased GHG emissions, and Project design features that would avoid or minimize those emissions.

The approach employed is that, in lieu of an adopted significance threshold for GHG emissions, or a methodology for analyzing air quality impacts related to GHG emissions, the effects of a proposed project may be evaluated based not upon the quantity of emission, but rather on whether practicable available control measures are implemented, similar to construction-related dust emissions within the San Francisco Bay air basin. Theoretically, if a project implements reduction strategies identified in AB-32, the Governor's Executive Order S-3-05, or other strategies to help toward reducing GHGs to the level proposed by the Governor and targeted by the City of San Rafael, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change. Alternatively, a project could reduce a potential cumulative contribution to GHG emissions through energy efficiency features, density and locale (e.g., compact development near transit and activity nodes of work or shopping).

Affects of Climate Change on the Project

As described above in the Setting section, scientific studies indicate that increases in greenhouse gas emissions from human activities are leading to higher concentrations and a change in composition of the atmosphere. For instance, the concentration of CO₂ in the atmosphere has risen about 30 percent since the late 1800s. Many sources and models indicate that temperatures on earth are currently warming and will continue to warm at unprecedented levels. The global mean surface temperature has increased by 1.1° F since the 19th century, and the 10 warmest years of the last century all occurred within the last 15 years.⁵

The many effects of Greenhouse Gas Emissions (GGE) are still being researched and are not fully known, but are expected to include increased temperatures and severe weather conditions that would: reduce snowpack, a primary source of drinking water; exacerbate air quality problems and adversely impact human health by increasing heat stress and related deaths; increase the incidence of infectious disease, asthma and respiratory health problems; cause sea levels to rise, threatening urban and natural coastlands; increase pests and pathogens; and cause variations in crop quality and yields.

Significant consideration with respect to the affects of climate change on the Project must be given to the potential for GHG-induced rise in sea level to impact the Project. The Project site is located in an area that would likely be subject to coastal or other flooding resulting from climate change during the economic life of the Project; therefore, analysis of this potential impact is provided below.

Sea Level Rise

Over the last 100 years, the temperature of the earth's surface has risen approximately 0.6 degrees Celsius (1.8 degrees Fahrenheit).⁶ Global warming causes thermal expansion of the upper layers of the ocean, which increases the volume of water, as well as melting of the earth's glaciers and polar ice fields. Tidal gauge measurements collected over the last 100 years indicate that sea level is rising relative to the land surface in many locations throughout the world.⁷ It is widely believed by experts that sea level will continue to rise in response to global warming, and may actually accelerate through the 21st century.⁸ Such increases in sea

⁵ Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, March 2006.

⁶ United States Environmental Protection Agency, EPA 230-R-95-008, *The Probability of Sea Level Rise*, October 1995.

⁷ Bay Conservation and Development Commission (BCDC), *Sea Level Rise: Predictions and Implications for San Francisco Bay*, October 1988.

⁸ UNEP Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2001: The Scientific Basis*.

level, if sustained over long periods of time, could create or exacerbate existing coastal flooding hazards for the Project site by elevating mean sea levels. The most recent region-specific estimate from U.S. EPA predicts a 0.5-foot rise in the level of the San Francisco Bay by the year 2050.⁹

The Project site is located in a low-lying area adjacent to the Bay. Global warming is expected to continue to cause the rise in sea level, which could increase the area of the Project site affected by the 100-year flood. However, with the protection afforded the Project site by the surrounding levees (+9 MSL), the proposed Project would not be expected to result in significant impacts from structures being inundated or being located within 100-year flood hazard areas. The required wet flood-proofing of the proposed buildings on the proposed Project would provide a one-foot freeboard above the 100-year flood level. However, overall, from the studies and predictions of global, regional and local sea level rise conducted so far, uncertainties in data and methods have provided an inadequate foundation to assess future sea level rise in the San Francisco Bay area. Based on a thorough investigation of scientific predictions of climate change induced sea level rise, it can be ascertained that the proposed Project, because of its proximity to the Bay, has the potential to experience flooding. It is expected that a 0.5-foot rise in the level of the San Francisco Bay would occur by the year 2050. Therefore, until 2050, impacts regarding sea level rise would be less than significant. However, there is significant uncertainty involved in making predictions of sea level rise and existing predictions cover a considerable range. Therefore, a conclusion on significance of the environmental impact of climate change-induced sea level rise on the proposed Project cannot be reached. Section 15145 of the CEQA Guidelines provides that, if after a thorough investigation a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impacts. No impact conclusion beyond the horizon year of 2050 can be made based on a thorough investigation of the issue.

As part of the proposed Project, the buildings on the site would be treated with wet flood-proofing up to seven feet above the existing mean sea level elevation (thereby providing at least one foot of freeboard above the 100-year flood elevation). If a 0.5-foot rise in the Bay were to occur by 2050, the Project site would not be inundated under any of the estimated tide elevations (i.e., mean sea level, half tide, mean high water, etc.). In addition, according to a report prepared by FEMA concerning their National Flood Insurance Program (NFIP), because of the aspects of flood insurance rate-making that already account for the possibility of increasing risk, and for new construction that builds more than one foot above the base flood elevation, the NFIP would not be significantly impacted under a 1-foot rise in sea

Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change, 2001.

⁹ United States Environmental Protection Agency, EPA 230-R-95-008, *The Probability of Sea Level Rise*, October 1995.

level.¹⁰ FEMA monitors the progress in the scientific community regarding projections of future changes in sea level and will consider follow-on studies that provide more detailed information on potential impacts of sea level rise on the NFIP. Therefore, the incremental increase in inundation elevation resulting from predicted sea level rise through 2050 would not be expected to result in increased flooding hazards for the Project site and impacts associated with sea level rise over the next 50 years would be *less than significant*. Refer to discussion in Chapter 10, Hydrology and Water Quality, for additional information.

Affects of the Project on Climate Change

Although it is possible to generally estimate a project's contribution to CO₂ into the atmosphere, it is a matter of speculation whether that project increases existing levels of GHGs globally or in the State of California. Moreover, even if it is assumed that a project does create an incremental increase in those emissions, it is typically not possible to determine whether or how an individual project's relatively small incremental contribution might translate into physical effects on the environment, given the considerations discussed above.

The amount of increased GHG emissions that may be generated by the proposed Project would not, by itself, influence global climate change. It cannot currently be determined if the proposed Project would provide an incremental contribution to the cumulative increase in GHG emissions.

As previously noted, there are no published thresholds of significance, and no regulatory guidance available that evaluate climate change and GHG emissions in conjunction with individual development projects. In addition, the scientific and technical literature indicates that there is not yet a methodology for reflecting the impact of individual land use decisions in climate change models. Until such time that sufficient scientific basis exists to accurately project future climate trends and guidance is provided by regulatory agencies on the control of GHG emissions and thresholds of significance, the significance of the proposed Project's contribution to global GHG emissions, pursuant to CEQA, cannot be judged, but is likely less than significant.

As discussed above, the construction and operation of the proposed Project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG) occurring during operation. Typically, more than 80 percent of total energy consumption takes place during the use of the buildings, and less than 20 percent is consumed during construction. As yet, there is no study that quantitatively assesses all of the GHG emissions associated with each phase of the construction and use of an individual residential development.

¹⁰ FEMA, *Projected Impact of Relative Sea Level Rise on the National Flood Insurance Program*, October 1991.

Overall, the following activities associated with the proposed Project could contribute to the generation of GHG emissions:

- Removal of Vegetation – The net removal of vegetation for construction results in a loss of carbon sequestration in plants. Alternately, planting of additional vegetation would result in additional carbon sequestration and lower carbon footprint of the Project.
- Construction Activities – Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane, and nitrous oxide. Furthermore, methane is emitted during the fueling of heavy equipment.
- Gas, Electricity and Water Use – Gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas (as before a flame on a stove is sparked), and from small amounts of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California’s water conveyance system is energy-intensive, with electricity used to pump and treat water.
- Motor Vehicle Use – Transportation associated with the proposed Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

While the proposed Project and all development of similar land use would generate GHG emissions as described above, the City of San Rafael’s ongoing implementation of Section 14.16.365 of its zoning code (“Green Building Ordinance”), described above under Regulatory Setting, and other programs/policies, will collectively reduce the levels of GHG emissions and contributions to global climate change attributable to activities throughout San Rafael.

As stated earlier in this chapter, the proposed Project is not subject to the City’s Green Building Ordinance because its implementation occurred after the Project application had been submitted and deemed complete. While no significant GHG emissions-related impacts have been identified, and no mitigation is required, Project characteristics and design features that have been included in the Project to reduce the amount of GHG emissions generated during construction and operation are provided below:

Energy Efficiency – The proposed project would be required to comply with all applicable local, state, and federal regulations associated with the generation of GHG emissions and energy conservation. In particular, construction of the proposed project would also be required to meet California Energy Efficiency Standards for Residential and Nonresidential Buildings. Additionally, as described above, the City’s Green Building Ordinance requires non-residential projects from 5,000 to 29,000 square feet in size to retain the services of a LEED® accredited professional and submit a copy of the LEED® checklist and supporting documentation indicating compliance with the City’s standards. Compliance with the Green

Building Ordinance would reduce future energy demand as well as reduce the project's contribution to regional GHG emissions.

Although the proposed Project is not subject to the GBO because its application was submitted before implementation, the Project Description in Chapter 3 of this document describes the following design measures to be incorporated into the Project, which are consistent with the goals of the GBO and would implement portions of the statute:

- Qualify project for certification under the US Green Building Council's LEED® program
 - Minimize project impacts on local and global environment
 - Minimize operating costs using state-of-the-art energy efficient technologies
 - high efficiency field lighting combined with ample natural lighting (windows) to reduce electrical usage
 - photovoltaic solar panels to produce clean electricity from the sun
 - ET Water smart irrigation controllers to minimize water use and eliminate irrigation runoff into Gallinas Creek

The design measures described above are based upon statements from the Applicant and outlined in both the Project Description and the Applicant's stated objectives (see Chapter 3). However, due to the fact that the GBO does not apply to the Project, there is currently no mechanism to ensure that these measures are incorporated into the design of the Project. Additionally, although qualification of the Project for the USGBC's LEED® program would be considered a beneficial aspect of the Project, it is not required as mitigation to reduce a potentially significant impact of the Project on the environment. Therefore, it is **recommended** that a condition of Project approval be included that requires the Project to qualify for the USGBC's LEED® program. Although the Project is not subject to the City's Green Building Ordinance, at a minimum the Project should be consistent with the provisions for LEED® certification contained therein. Qualification should be addressed at every phase of project construction and verified prior to occupancy.

Construction Waste – The proposed project will be required to comply with the Construction and Waste Reduction Ordinance and submit a Construction and Demolition Waste Reduction Plan for review and approval. As a result, construction-related truck traffic, which primarily have diesel fueled engines, would be reduced since demolition debris hauled off site would be reused on site. In addition, reuse of concrete, asphalt, and other debris will reduce the amount of material introduced to area landfills.

Although no significant impacts related to GHG emissions have been identified, and no mitigation is required, the Project's GHG emissions generated during construction and

operation would be minimized by virtue of the existing characteristics and design features that have been included in the Project. In addition, emissions would also be reduced since the Project is subject to all the regulatory requirements and mitigation measures in this Initial Study that would reduce GHG emissions of the Project. These include, for example, adherence to best management construction practices and equipment use, and maximizing Provision C.3 standards regulating post-construction storm water.

Recycled Water – As mentioned in Chapter 3, Project Description; and discussed in Chapter 10, Hydrology, and under “Water Supply” in Chapter 14; recycled water is also available to the Project site via the Las Gallinas Sanitation District. Although the use of recycled water is not required in order to mitigate a potentially significant environmental impact based upon the current CEQA guidelines, the Water Supply discussion in Chapter 14 recommends requiring the use of recycled water as a condition of Project approval. As discussed above, California’s water conveyance system is energy intensive, as electricity is used to pump and treat water, resulting in GHG emissions. The use of recycled water from the nearby Las Gallinas Sanitation District would be less energy intensive, as it would reduce the load on the greater water conveyance system.

ALTERNATIVES

INTRODUCTION

CEQA Guidelines Section 15126.6 requires that a reasonable range of alternatives to the proposed project be described and considered within an EIR. The alternatives considered should represent scenarios that could feasibly attain most of the basic objectives of the project, but will avoid or substantially lessen the significant environmental effects of the project. The purpose of the alternatives section is to provide decision-makers and the public with a discussion of alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.¹

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Where a lead agency has determined that, even after adoption of all feasible mitigation measures, a project as proposed would still cause significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, must first determine whether, with respect to such impacts, there remain any project alternatives that are both environmentally superior and feasible within the meaning of CEQA.

CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation (§15126.6(a)).
- An EIR is not required to consider alternatives which are infeasible (§15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project (§15126.6(b)).

¹ CEQA Guidelines, Section 15126.6 (b)

- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§15126.6(d)).

RELATIONSHIP TO PROJECT OBJECTIVES

The following are the primary objectives of the San Rafael Airport Recreation Facility Project, as stated by the Project Applicant. The objectives provide an important benchmark in conducting the comparative alternatives analysis and the feasibility of each. As discussed previously, an alternative is only meaningful for consideration if it can meet the basic objectives of the project as proposed.

General Objectives

Create an economically self-sustaining, non-taxpayer financed, multi-sport recreational facility that provides all Marin County families with the opportunity to recreate year round on safe, all-weather fields and courts. The facility shall include an indoor facility with ceiling heights and field sizes that meet national recreational standards for soccer and other field/court sports. The facility shall be designed in an environmentally sensitive manner in order to complement the surrounding land uses, including the existing airport and industrial park, McInnis Park, surrounding residences, and wildlife habitat within Gallinas Creek.

Specific Objectives

- Provide commercial, multi-sport athletic facility as called for in policies PR-13 and PR-14 of San Rafael General Plan.
 - Include 3 or more independent and separate sports operators in order to serve broad cross section of community, and to minimize chance of project failure should any one operator go out of business
 - Include indoor building in order to provide recreational activities that cannot be conducted outdoors due to weather, light, or nature of the activity
 - Devote at least 35% of indoor space to high revenue sports in order to subsidize soccer, which generates insufficient revenue to profitably operate a commercial facility in Marin County

- Utilize tall clear span metal building in order to minimize project construction costs (to make the project economical given the low revenues from recreational uses) while providing the large column free field areas and high ceilings required for ball play.
 - Include three 200' x 100' clear span areas with average ceiling heights of 30-35 feet
 - All field areas must be capable of hosting multiple field/court/rink sports such as soccer, hockey, basketball, lacrosse
 - ensures that space is full on a daily basis
 - ensures that space remains marketable to new users over time
- Provide equal recreational opportunities for all family members, including boys, girls, teens, and adults, as called for in policy PR-4 of the San Rafael General Plan.
 - Focus youth under 12 activities during daylight hours, teen activities after school from 5 —8 pm, and adult activities in evenings from 8 pm — 11 pm (12 pm Fri/Sat)
 - Provide 3-4 hours of daily exclusive adult play time at soccer facility
 - adult fees are required to offset low youth fees
 - soccer operation is not economically sustainable as youth only facility
- Qualify for traditional commercial mortgage financing providing 75% of project costs
 - Project income must be sufficient to pay the mortgage and provide a reasonable rate of return on the 25% project down payment
 - Include credit worthy sports operators with proven track records of success
 - Secure Use Permit conditions necessary for sports operators to succeed given Marin County's high costs of doing business
 - Secure operating hours comparable to other indoor sports facilities in California
- Design a facility that is safe for recreation and aviation users at San Rafael Airport.
 - Physical improvements shall comply with aviation setback and clear zone guidelines established by the FAA and CalTrans Dept. of Aeronautics
 - Project shall not include any features that attract wildlife that is hazardous to aircraft safety, as defined by the FAA and Caltrans Dept. of Aeronautics.

- Design project in accordance with environmentally sensitive manner to comply with all City wetland protection standards
 - Screen and downshield all lighting to minimize light spill and glare into Gallinas Creek and into surrounding residential neighborhoods
 - Comply with all Gallinas Creek setback requirements established by the City of San Rafael for the protection of wildlife within Gallinas Creek
 - Adopt stormwater pollution prevention program (SWPPP) that complies with Regional Water Quality Board standards for protection of Gallinas Creek
- Qualify project for certification under the US Green Building Council’s LEED program (Leadership in Energy and Environmental Design)
 - Minimize project impacts on local and global environment
 - Minimize operating costs using state-of-the-art energy efficient technologies
 - high efficiency field lighting combined with ample natural lighting (windows) to reduce electrical usage
 - photovoltaic solar panels to produce clean electricity from the sun
 - ET Water smart irrigation controllers to minimize water use and eliminate irrigation runoff into Gallinas Creek

PROJECT ALTERNATIVES

The Project, as analyzed within this EIR, would result in significant and/or potentially significant impacts to the environment; however all identified impacts can be mitigated to a less than significant level with implementation of mitigation measures recommended in this EIR. Moreover, this Project would not result in any significant unavoidable environmental impacts. This EIR evaluates alternative development plans that would potentially further decrease impacts. Used on the requirements of CEQA Guidelines Section 15126.6, these alternatives were selected based on the development constraints of the Project site and in consideration of the potentially significant impacts of the Project identified in the analysis contained in this EIR. These include:

- **Alternative 1—No Project Alternative**
- **Alternative 2—Reduced Development Alternative**
- **Alternative 3—Alternative Location**

ALTERNATIVE 1—NO PROJECT

CEQA Guidelines Section 15126.6(e) requires that a “no project” alternative be evaluated, along with its impacts. However, the “no project” alternative must be the *practical result* of non-approval of the project, which does not necessarily equate to no development. CEQA Guidelines Section 15126.6(e)(3)(B) states that “if a project is other than a land use plan or regulatory plan, for example a development project on an identified property, the “no project” alternative is the circumstances under which the project does not proceed. . . .If disapproval of the project under consideration would result in predictable actions of others, such as the proposal of some other project, this “no project” consequence should be discussed. . . . [W]here failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical results of the project’s non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment.”

DESCRIPTION OF NO PROJECT ALTERNATIVE

As described in Chapter 4: *Land Use*, on March 19, 2001, following the review and recommendation by the Design Review Board and Planning Commission, the San Rafael City Council approved a Master Use Permit to allow the permanent operation of San Rafael Airport. Non-aviation and light-industrial uses were among the allowed land uses under the Master Use Permit. As outlined in Chapter 11, this Master Use Permit did not authorize any expansion of airport operations or number of based aircraft. The summary of the major component of the Master Use Permit are identified below:

- The private airport use is limited to 100-based aircraft.
- The following airport uses or activities are specifically prohibited: flight training and the use of the landing strip for practice purposes by flight instructors; helicopters, charter flights, uses or activities of a public or semi-public nature, commercial flight activity or student pilot training, and non-based aircraft performing landings or departures.
- Maintenance or servicing of aircraft shall be limited to aircraft based at San Rafael Airport
- The non-aviation uses are limited to those uses approved by the Use Permit and there shall be no increase in the amount of square footage. An Administrative Use Permit shall be required for changes in tenancy.
- The non-aviation hours of business are limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Saturday, excluding holidays.

- The two new modular residences shall be used exclusively as on-site residences for the airport security guard and caretaker.
- All run-ups shall occur at the east end of the runway, or in a designated run-up area in the vicinity of the intersection of the taxiway and runway.
- The airport runway shall be identified with a symbol that the airport is private.

Declaration of Restrictions

In addition to the Master Use Permit, restrictive covenants were recorded for the airport site in December 1983 (see Chapter 4). The City of San Rafael, Marin County and the then property owner entered into a Declaration of Restrictions for the airport property that limits the site to the following uses:

- a) Existing uses consisting of the airport and related uses.
- b) Future utility uses as approved by the appropriate government agencies, including flood control, sanitary sewer, gas and electricity, and public safety facilities.
- c) Airport and airport-related uses.
- d) Roadways.
- e) Open space.
- f) Private and public recreational uses.

No Project Alternative

As outlined above, the Master Use Permit permits limited non-airport and industrial uses. Further, the 1983 Declaration of Restrictions recorded on the airport site specifies permitting open space and private and public recreational uses at the airport. As described in Chapter 4: *Land Use and Planning*, the proposed Project is not consistent with the current Planned Development District and Master Use Permit established for the airport site. As part of the submitted application for development, the Project Applicant has included an application for an amendment to the PD District and Master Use Permit to establish appropriate standards and regulations for the indoor and outdoor use facility. The existing Declaration of Restrictions allow for “private and public recreational uses,” but not a recreational facility. Disapproval of the proposed San Rafael Airport Recreation Facility would not necessarily result in the permanent preservation of existing environmental conditions at the airport. Pursuant to CEQA Guidelines Section 15126.6(e)(3)(B) which states, “. . .If disapproval of the project under consideration would result in predictable actions of others, such as the proposal of some other project, this “no project” consequence should be discussed. . . .,” this “no project” analysis addresses the potential environmental impacts of the future

development consistent with the sites land use designations and permitted uses. If the proposed Project is disapproved, a future applicant could also submit a proposal for a project that includes recreational use consistent with the existing PD District and Master Use Permit.

Therefore, this “no project” alternative analyzes the potential environmental impacts of a future project application that fully conforms to the existing PD District and Master Use Permit. This alternative assumes that the outdoor soccer field and warm-up area that are currently proposed would conform to the existing PD District and Master Use Permit, however the indoor soccer/dance/gymnastics facility would not. Uses assumed under this alternative, therefore, would resemble those of nearby McInnis Park; the proposed building would be replaced by an additional full-sized outdoor sports field, and the area proposed for the building’s dance and gymnastics area would be replaced by a playground. Field lighting would still be allowed; however, only where it is currently proposed (i.e. only one outdoor sports field would be lit at night). The hours of operation under this alternative would terminate at 10 p.m., similar to McInnis Park across the creek. Lastly, the bridge access would remain one lane under this alternative.

COMPARATIVE ENVIRONMENTAL ANALYSIS

Land Use and Planning (similar)

As discussed above, land use on the Project site is governed by a Master Use Permit that limits the type of non-aviation uses that would be permitted. In addition, restrictive covenants on the site further limit the permitted non-aviation uses to open space and private and public recreational uses. As discussed in Chapter 4 of this EIR, the proposed Project is consistent with the site’s general plan and zoning land use designations established by the City of San Rafael *General Plan 2020* and Municipal Code but not the current Planned Development District or Master Use Permit and restrictive covenants. However, as part of the Project application, the Applicant seeks to have the PD District and Master Use Permit amended to allow for the uses proposed. The analysis in Chapter 4 determined that considering the analysis and recommended mitigation measures provided throughout this EIR, amending the PD District and Master Use Permit would not result in potentially significant environmental impacts.

Under this alternative, there would be no need to amend the existing PD District or Master Use Permit. However, since the analysis in Chapter 4 of this EIR determined that, in light of the analysis and recommended mitigation measures provided throughout this document, amending the PD District and Master Use Permit would not result in potentially significant environmental land use impacts. For this reason, a “no project” alternative that does not require amending the PD District or Master Use Permit would not eliminate or significantly reduce any of the Project’s potentially significant land use impacts; therefore, this alternative would have land use impacts that are *similar* to the proposed Project.

Aesthetics (similar)

The design of the proposed Project was reviewed by the City's Design Review Board (DRB) which recommended approval. Based on the DRB review, the proposed Project would have a less than significant impact with respect to aesthetics and scenic resources. This decision is based, in part, on visual simulations of the proposed Project from various public and private viewpoints, which enabled the DRB to determine that the Project's impacts on vistas would be less than significant.

In the event that this Project is denied, any future development on the Project site would be required to conform to the site's underlying land use designations, the Master Use Permit, and the restrictive covenants that are attached to the site, which restrict the non-airport uses to recreational or light industrial uses. As discussed above, this alternative would fully conform to the existing PD District and Master Use Permit; consequently, no building would be constructed under this alternative.

Due to the direction of General Plan Policy CD-5 to "Respect and enhance . . . views of the Bay and its islands, . . . Mt. Tamalpais, Marin Civic Center and hills and ridgelines from public streets, parks and publicly accessible pathways," any future proposal would likely be required to undergo design review. However, since no buildings would be constructed it is not likely that visual simulations similar to those prepared for the proposed Project would be required, as the absence of a structure would preserve all vistas analyzed in this EIR. However, the analysis of the proposed Project's building in Chapter 5 determined that it would have a less than significant impact on scenic vistas; moreover, the City's DRB recommended approval of the Project's preliminary design, but requested final approval.

Under this alternative outdoor field lighting would be allowed in a configuration similar to the proposed Project. The light and glare analysis in Chapter 5 of this EIR determined that Project lighting would result in a potentially significant impact because lighting of the playing field would receive an average intensity of 2.0 foot-candles, which is greater than the City's generally accepted standard of 1.0 foot-candle average intensity. This potential impact is mitigated with **MM Aesth-1a**, which requires the Project to demonstrate its ability to meet the City's standard and undergo further review and approval of the lighting plan by the DRB. The Applicant proposes to utilize a lighting system that uses 50 percent less electricity and produces 50 percent less spill and glare than traditional fixtures. It is not guaranteed that a future development proposal will also utilize a similar system; however, a future proposal would be required to adhere to the same standard and undergo similar review and approval by the DRB.

All potentially significant aesthetics impacts of the proposed Project can be mitigated to a less than significant level through the implementation of recommended mitigation measures. There are no potentially significant impacts of the proposed Project related to scenic views that require mitigating. The "no project" alternative would not result in impacts to scenic vistas, but would be required to meet the same lighting standards that the proposed Project

must meet as determined by the DRB. For these reasons the “no project” impacts to Aesthetics are considered to be *similar* to those of the proposed Project.

Air Quality (similar)

Analysis of the proposed Project identified one potentially significant impact associated with air quality: short-term impacts associated with construction activities. This impact is reduced to a less than significant level, however, with the implementation of standard construction emission control measures identified by the BAAQMD, which are required to be incorporated into the Project, as required by **MM AQ-1**.

Although this alternative does not include the construction of a building, this alternative would involve construction activities such as grading. As such, the measures provided in **MM AQ-1** for the proposed Project would likewise be required of any future proposal. This alternative would likely result in fewer vehicle trips than the proposed Project because the elimination of the dance and gymnastics uses would eliminate the generation of trips for these uses; however, the analysis of the proposed Project determined that its traffic related air quality impacts would be less than significant; therefore, the reduced vehicle trips assumed under this alternative would not reduce a previously identified potentially significant impact.

Because this alternative would require mitigation addressing construction impacts similar to those of the proposed Project and its reduced vehicle trips would not reduce a previously identified potentially significant impact, the air quality impacts of the “no project” alternative are determined to be *similar* to the proposed Project.

Biological Resources (similar or less than)

The analysis of the proposed Project’s impacts to biological resources is provided in Chapter 7 of this EIR. Although all impacts of the Project can be mitigated to a level considered less than significant, the analysis identified potentially significant impacts to special status wildlife species associated with various aspects of construction and operation activities of the proposed Project. The biological analysis also identified a potentially significant impact associated with the construction of the bridge-deck on the top of the bank of the North Fork of Gallinas Creek, as it is within the jurisdiction of the California Department of Fish and Game; as well as a potentially significant impact associated with the proposed outdoor lighting.

Under this alternative, the indoor recreation building would not be constructed, nor would the bridge deck be replaced; however, this alternative assumes a field lighting configuration similar to the proposed Project. In lieu of the indoor recreational facility, an additional outdoor playing field and playground would be constructed. Additionally under this alternative, activities on the site would cease by 10 p.m. at the latest, consistent with the hours of McInnis Park; rather than 11 p.m. as proposed.

Although the indoor recreational facility would not be constructed under this alternative, potentially significant construction-related impacts to biological resources would still occur under this alternative. Construction activities such as grading would be required, resulting in similar potential impacts to water quality and, consequently, special status fish species. Therefore, similar to the proposed Project, under this alternative an Erosion Control Plan, SWPPP and SWMP would be required to address pre- and post-construction water quality impacts to, among others, special status fish species in the creek, similar to what would be required under the proposed Project.

Since the bridge is not assumed under this alternative, any associated potentially significant impacts to biological resources would not occur. This means there would be no potential indirect impact as a result of pile driving at the top of the creek bank; although the proposed Project's similar impacts are fully addressed and reduced to a less than significant level through mitigation measures provided in Chapter 7 of this EIR such as **MM Bio-1a**.

The proposed Project's nighttime field lighting was identified as a potentially significant impact to wildlife species in the North Fork of Gallinas Creek; however, this is mitigated through the Project's requirement to obtain final lighting plan approval from the DRB and by establishing a lighting curfew of 10:00 p.m. for all project activities (**MMs Bio-3a and 3b**, respectively). Under this alternative, approval of the final lighting plan by the DRB would likely still be required, but the project would close by 10:00 p.m., thereby eliminating the need for a mitigation requiring this.

Under this alternative there would be similar potential impacts to nesting raptors, common and special status nesting birds, burrowing owls and pallid or other bat species, requiring similar mitigation similar to **MMs Bio-4** through **MM Bio-6**, and **MM Bio-8** that recommend nesting season and pre-construction surveys and specify appropriate construction windows.

Since under this alternative there would be a sports field and playground located where the proposed Project's indoor recreational building would be located, there would still be human activities in this area that could result in potentially significant indirect impacts to California clapper rails, black clapper rails, the salt marsh harvest mouse, Suisun shrew and San Pablo vole; all of which have habitat identified along the banks and corresponding upland areas of the creek on the other side of the levee from the Project site. Chapter 7 of this EIR recommends construction activity avoidance measures to address potential impacts to this area, and the establishment of a perimeter fence and biological protection area for the habitat of value located along the creek and upland area in this area. Under this alternative, there would still be a potential for indirect impacts to these species due to the activities assumed to occur on the other side of the levee; therefore, the establishment of a perimeter fence and biological protection area such as required in **MMs Bio-2a and 2b** would also be required to

mitigate potentially significant impacts. Therefore, this alternative would have potential impacts to these species that are similar to the proposed Project.

Based upon this analysis, the “no project” alternative would require fewer mitigation measures in order to reduce potentially significant impacts to a level considered less than significant since the building construction and bridge replacement would not occur and there would be no need to mitigate for pile-driving activities. However, the measures recommended for the proposed Project would result in reducing all impacts to a less than significant level. The “no project” alternative would not eliminate or significantly reduce any significant or potentially significant impacts of the proposed Project; however fewer mitigation measures would be required under this alternative. Therefore, under this alternative, biological resources impacts are considered to be *similar* to or *less than* those of the proposed Project.

Cultural Resources (similar)

The Project site has a high sensitivity rating based on the City’s Archaeological Sensitivity Map. However, according to the Cultural Resources Evaluation prepared for this site, there are no historic buildings or other known historic resources on the subject property, the existing site does not contain any architectural resources listed in the local historical survey or in the California Register of Historical Resources, and there are no unique geologic features on the Project site. However, the site is located in an area near lands known to be previously occupied by Native Americans and it is possible that prehistoric and historic materials may be encountered during grading. The cultural resources analysis in Chapter 8 of this EIR identified the potential discovery of historic or prehistoric materials as a potentially significant impact and provides mitigation that will reduce this impact to a level considered less than significant.

The Project site will remain highly culturally sensitive regardless of what type of future project may be proposed in the event that the proposed Project is denied. Any future proposed development would be required to undergo a cultural resources evaluation. Considering the cultural resources evaluation prepared for the proposed Project did not identify the presence of culturally sensitive resources, it is unlikely that any would be discovered under a future development proposal. Moreover, considering the high cultural sensitivity of the site, as identified on the City’s Archaeological Sensitivity Map, any future development proposal could also involve the discovery of previously unknown prehistoric and historic materials; therefore, similar mitigation would be required.

Based on this analysis, the “no project” alternative discussed here would have potential impacts upon cultural resources that are *similar* to those of the proposed Project.

Geology and Soils (similar or less than)

The geotechnical analysis conducted for this Project included a geotechnical report prepared by John C Hom & Associates, Inc. (JCH), which was peer reviewed by Kleinfelder, consistent with the Geotechnical Review Matrix contained in the City of San Rafael's *General Plan 2020*. The geotechnical study identified Bay Mud soils on the Project, which is not suitable for at-grade foundation support. Additionally, the geotechnical study determined that additional fill is not appropriate for the site due to the potential for induced settlement on the site. This condition is identified as a potentially significant impact in the geology and soils analysis in Chapter 9 of this EIR, which provides a mitigation measure requiring the Applicant to adhere to all recommendations of the geotechnical analysis prepared by JCH (**MM Geo-1**). This mitigation measure successfully reduces the Project's impact regarding geology and soils to a level considered less than significant.

The "no project" alternative would not include the construction of the indoor recreation facility; therefore, the presence of Bay Mud on the site would not trigger any impacts or corresponding mitigation measures associated with its unsuitability to support a building foundation. Although the mitigation measure provided for the proposed Project reduces this associated impact to a level considered less than significant through standard grading precautions and engineering methods, this mitigation would not be required under this alternative. This alternative would not eliminate a potentially significant impact of the Project because the recommended mitigation will result in reducing the associated impact to a less than significant level, but it would eliminate the need to mitigate for foundation construction due to the presence of Bay Mud. Therefore, the "no project" alternative's impacts to geology and soils would be *similar* to or *less than* those of the proposed Project.

Hazardous Materials and Safety Hazards (similar)

The hazardous materials analysis in Chapter 10 of this EIR contains information based on site inspections, the City's hazardous materials database, the State Department of Toxic Substances EnviroStor database, the City of San Rafael Municipal Code, and the Aeronautical Safety Review report prepared for the Project by Mead & Hunt, Inc.

The hazardous materials analysis in Chapter 10 of this EIR did not identify any potentially significant impacts associated with construction of the proposed Project; all issues discussed resulted in a determination of either less than significant or the determination that there would be no impact. The elimination of the indoor recreational facility and replacement with an outdoor sports field and playground as assumed under this alternative would not alter any of these determinations; therefore, the "no project" alternative would also result in a similar determination regarding hazardous materials.

Due to the Project's location on an airport site, this chapter of the EIR also includes an analysis of the Project with respect to aeronautical safety based on the *California Airport Land Use Planning Handbook*, published January 2002 by the California Division of

Aeronautics. This analysis identified two potentially significant impacts; one associated with the expected concentration of people at the site once it's in operation (including young and elderly people, who are considered higher risks due to the difficulty this segment of the population may have in moving from harm's way), and one identifying potential hazards of the Project to the flight operations of the adjacent airport as a result of building design. The elimination of the indoor recreational building under this alternative would eliminate any potential safety impacts to flight operations of the adjacent airport as a result of building design; although, mitigation measures included in Chapter 10 address these potential impacts by requiring the incorporation of risk-reduction design features into Project design such as an additional emergency exit beyond the California Building Code requirements and an enhanced fire sprinkler system. The resulting impacts are reduced to levels considered less than significant with the incorporation of recommended risk-reduction features. Additionally, it is unknown whether the replacement of the indoor recreational facility with an outdoor sports field and a playground would significantly reduce the concentration of people who use the site; however, it is likely that the "no project" alternative would still result in concentrations of young and elderly on the site, requiring measures that are similar to those provided in Chapter 10.

As discussed above, the impacts identified in Chapter 10 associated with the proposed Project can be mitigated to a level considered less than significant. However, a future development proposal under the "no project" alternative would eliminate the need for mitigation of building design related impacts to flight hazards. For this reason, the "no project" alternative would be *similar* to or *less than* the proposed Project with respect to hazardous materials or aeronautical safety hazards.

Hydrology and Water Quality (similar or less than)

The hydrology analysis in Chapter 11 of this EIR identified two potentially significant impacts of the proposed Project. One is associated with the Project's potential to adversely impact water quality and waste discharge requirements from construction and operational activities, and the other is the potential for flooding due to levee failure due to the site's location within a 100-year floodzone and its protection from flooding to the north, west and east by flood control levees. Mitigation for potential water quality impacts require the preparation of an Erosion Control Plan, SWPPP and SWMP as required under the City's NPDES permit, and the proper maintenance of on-site drainage swales and paved areas. The mitigation for the potential impact regarding development within a 100-year floodzone entails wet flood-proofing of all portions of the proposed building below +7' NGVD and requiring the construction plans to be reviewed and signed by a registered engineer. Implementing these measures reduce the potential for flooding at the Project site to a less than significant level.

Under this alternative, the City would also require the preparation of an Erosion Control Plan, SWPPP and SWMP as required under the City's NPDES Permit, as the Project site is

9.1 acres (located on the greater 119.2-acre airport site) and NPDES requirements apply to construction sites that disturb land greater than one (1) acre. Therefore, the elimination of the indoor recreational facility under this alternative would not eliminate or significantly reduce any potentially significant impacts of the proposed Project regarding pre- or post-construction water quality.

The “no project” alternative would not entail the construction of the indoor recreational facility; therefore, the potential impact to building a structure within the floodplain would not occur. However, as discussed, the requirement in **MM Hyd-2** requiring wet flood-proofing of the proposed structure reduces this impact to a level considered less than significant. The elimination of the building under this alternative would not require mitigation to ensure that a building constructed within the 100-year flood zone is properly flood proofed.

The analysis in Chapter 10 of this EIR determined that in the event of flooding due to a levee breach or from a 100-year storm event there would be enough time for users to safely leave the site before floodwaters present a hazard. This condition would be the same under this “no project” alternative. In the event of flooding due to a levee breach or from a 100-year storm event under this alternative, there would still be enough time for users to safely leave the site before floodwaters present a hazard. Therefore, this alternative does not eliminate or significantly reduce the potential hazards to users in the event of flooding; this impact would remain less than significant.

The “no project” alternative would not significantly reduce any hydrology and water quality impacts of the proposed Project, as all Project hydrology impacts can be reduced to a less than significant level. However, this alternative would eliminate the need to mitigate for a structure placed within a 100-year flood zone. For these reasons, impacts of the “no project” alternative would be *similar* to or *less than* those of the proposed Project.

Noise (similar)

The noise analysis in Chapter 12 of this EIR identified three noise impacts: operational noise, general construction noise, and noise associated with pile driving. These impacts are fully reduced to a level considered less than significant by mitigation measures included in the analysis. Operation noise is mitigated via a recommended adjustment of the operational hours of the facility to close at 9 p.m. Sunday through Thursday, and 10 p.m. Friday and Saturday if the City receives noise complaints from the neighbors to the south. Construction noise is mitigated by imposing time restrictions on construction activities and engine noise controls on construction equipment. Pile driving noise is addressed through “quiet” procedures provided in the analysis.

The noise analysis is conducted, in part, by comparing a given Project against a given set of community noise standards, such as those contained in Figure 31 of the *San Rafael General Plan 2020*. Since a future development proposal has not yet been submitted, it is difficult to estimate the level of potential noise impacts such a proposal would impose. However, it is

possible to generalize based upon similar land uses, and considering the land use restrictions that the Master Use Permit and associated restrictive covenants impose on the Project site, it is probable that the operational noise of a future development proposal would generate impacts to operational noise that are similar to the proposed Project.

The elimination of the indoor recreational facility and its replacement with an additional outdoor sports field means that more users on the Project site would be outside during normal operational hours, which may result in an increase in ambient noise levels under this alternative. As discussed, this alternative would feature a lighting scheme that is similar to the proposed Project; however, this means that there would be no night time outdoor activities on the additional outdoor sports field or playground. While the proposed building would provide somewhat of a buffer between night time sports activities and residents to the west, it is likely that the replacement of this building with additional daytime outdoor recreational opportunities would still provide sufficient night time noise attenuation for recipients in neighborhoods to the west. Under this alternative, a noise analysis would also be required that would analyze any potential impacts and provide mitigation measures to reduce them to a level considered less than significant. Although the scope and results of such an analysis is beyond the scope of this alternatives analysis, development under this alternative would be consistent with the site's existing PD District and Master Use Permit, indicating that any potentially significant impacts of this alternative that result from an increase in ambient noise can be reduced to a level considered less than significant. Therefore, the elimination of the proposed indoor sports facility would not eliminate or significantly reduce any potentially significant operational noise impacts of the proposed Project.

The noise analysis of the proposed Project in Chapter 10 of this EIR identified potentially significant construction noise impacts associated with both general construction activities and pile driving activities. These impacts are reduced to a less than significant level by requiring time restrictions on construction activities and noise abating engine controls on construction equipment, as well as "quiet" pile driving procedures such as pre-drilling holes to maximum depth. Under this alternative, neither the proposed indoor recreational facility would be constructed nor the bridge deck be replaced, thereby eliminating the potential noise impacts resulting from pile driving. The general construction activity and engine abatement measures would still be required. Although **MM N-3** provided in Chapter 12 of this EIR effectively reduces this potential impact to a less than significant level, this alternative would eliminate the need for pile driving activities.

Eliminating the need for pile driving under this alternative would not significantly reduce a potentially significant noise impact of the proposed Project because the mitigation provided already achieves this; however, because this alternative would eliminate the need for mitigation, this "no project" alternative would have noise impacts that are *similar* to or *less than* the proposed Project.

Traffic and Circulation (similar)

The Project traffic analysis provided in Chapter 13 did not identify any potentially significant traffic impacts. Under the current proposal, the Applicant is proposing to replace the bridge deck across the North Fork of Gallinas Creek that provides access to the Project site. The current bridge provides a single vehicle travel lane with no additional dedicated passage for bicycles or pedestrians. The proposed new bridge deck would provide two lanes of vehicle travel and a bicycle/pedestrian lane on the same footprint as the existing bridge, thereby providing easier site access. However, as discussed in Chapter 13: *Transportation and Traffic*, and Chapter 14: *Other Environmental Effects*, the Fire and Police Departments have determined that the existing bridge provides adequate access and safety. Moreover, the elimination of the indoor sports recreational facility and replacement with an outdoor sports field and playground would likely reduce the overall use intensity of the site under this alternative, making the ease of passage that a new bridge deck would provide less beneficial. Additionally, the trip generation and LOS analysis of the proposed Project in Chapter 13 determined that impacts to vicinity intersections and arterial segments would be less than significant. The elimination of the indoor sports recreational facility and replacement with an outdoor sports field and playground, as well as this alternative's reduced operational hours, would likely result in even fewer peak-hour trips under this alternative. However, the reduced trip generation that would result from this alternative would not be necessary to eliminate or reduce an identified potentially significant impact of the proposed Project. Therefore, the "no project" alternative and the proposed Project would have *similar* impacts regarding traffic and circulation.

Other Environmental Effects (similar)

Chapter 14 of this EIR provides an analysis of "other effects" that could result from implementation of the proposed Project. This chapter provides an analysis of the following: Agricultural Resources, Mineral Resources, Population & Housing, Public Services (Police, Fire, Schools, etc.), Recreation, Utilities & Services, Cumulative Impacts and Growth Inducing Impacts. These issues were discussed in a single chapter rather than assigning separate chapters for each issue because the details of the proposed Project suggested that there would be few, if any, impacts in these areas. The resulting analysis in Chapter 14 determined that the proposed Project would not result in any potentially significant impacts in these areas.

The elimination of the indoor recreational facility and its replacement with an additional outdoor sports field and playground would likely result in fewer site users and a lower use intensity for the site; however such a reduction would not avoid or significantly reduce any potentially significant impacts of the proposed Project regarding these issues because there are none. Therefore, the "no project" alternative's impacts in these areas would likewise be *similar* to those of the proposed Project.

ALTERNATIVE 2—REDUCED INTENSITY

Alternative 2, the “reduced intensity” alternative, provides a comparison analysis between the proposed Project and an alternative that does not include nighttime lighting of the outdoor sports field and does not replace the single-lane bridge deck crossing the North Fork of Gallinas Creek along the Project’s approach. Alternative 2 also assumes the development of a smaller indoor sports facility, eliminating the dance and gymnastics areas (approximately 26,000 square feet). The indoor facilities will still remain open until as late as 10 p.m. on most nights.

The lighting under Alternative 2 would be similar to the lighting proposed under the previous IS/MND prepared for this Project and provided in **Appendix A** of this document (see *Prior Environmental Review*, Chapter 3, p. 3-51). This includes wall lights on the building, pole-mounted lights for the parking lot, and bollard lights for the existing and new roadways, but eliminates the eight (8) pole-mounted, 1500 Watt Green Generation luminaires proposed for field lighting.

COMPARATIVE ENVIRONMENTAL ANALYSIS

Land Use and Planning (similar)

As discussed above, land use on the Project site is governed by a Master Use Permit that limits the type of non-aviation uses that would be permitted. In addition, restrictive covenants on the site further limit the permitted non-aviation uses to open space and private and public recreational uses. As discussed in Chapter 4 of this EIR, the proposed Project is consistent with the site’s general plan and zoning land use designations established by the City of San Rafael *General Plan 2020* and Municipal Code but not the current Planned Development District or Master Use Permit and restrictive covenants. As part of the Project application, the Applicant seeks to have the PD District and Master Use Permit amended to allow for the uses proposed. The analysis in Chapter 4 determined that, considering the analysis and recommended mitigation measures provided throughout this EIR, amending the PD District and Master Use Permit would not result in potentially significant environmental impacts.

Alternative 2, which eliminates the use of field lighting for the outdoor playing field, allows the existing bridge deck to remain, and assumes the development of a smaller indoor sports facility that eliminates the proposed gymnastics and dance uses, would also require an amendment to the PD District designation and Master Use Permit to establish appropriate standards and regulations for the indoor sports facility regardless of its decreased size. The elimination of night-time field lighting and bridge deck replacement would not be required for the Project to avoid conflicts with a policy adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, this alternative would not avoid or significantly reduce an impact of the proposed Project in terms of land use. Therefore, Alternative 2 and the proposed Project would have *similar* impacts on land use.

Aesthetics (similar or less than)

The aesthetics discussion of the proposed Project provided in Chapter 5 of this EIR discusses the proposed Project's potential effects on scenic resources as well as its potential effects on light and glare. The Applicant's application submittal states that the Project proposes a state-of-the-art, environmentally friendly lighting system for field lighting that uses 50 percent less electricity and produces 50 percent less spill and glare than traditional fixtures that enable shorter poles while still achieving adequate lighting.

The scenic resources and views analysis in Chapter 5 determined that the building under the proposed Project would not result in significant impacts to surrounding visual resources. Under this alternative the building would be reduced in size by eliminating the dance and gymnastics areas (yet its height would remain the same to provide accommodation for indoor soccer). However, the reduction in size under this alternative would not eliminate or reduce any of the potentially significant impacts to scenic views or resources, as there would be no potentially significant impacts under the proposed Project.

The analysis of the proposed Project's building and parking lot lighting determined that all proposed lighting would be focused on the building, driveway and parking lot, but would not spill over onto the adjacent properties or the creek, resulting in a less than significant lighting impact for this area. The analysis of the field lighting resulted in the identification of a potentially significant impact that can be mitigated to a level considered less than significant through final lighting plan review and approval wherein it is required that the Applicant's claims of energy efficiency and reduced spill must be clearly demonstrated.

Omission of the field lighting under Alternative 2 would eliminate any potential light and glare impacts due to field lighting. As discussed above, no potentially significant impacts were identified regarding the proposed Project's building and parking lot lighting. Although this alternative would eliminate the proposed Project's potential impacts associated with field lighting, the mitigation measure requiring review and approval of the final lighting plan would successfully reduce this impact to a less than significant level. The elimination of field lighting under this alternative would not significantly reduce this impact, as the analysis provides mitigation that would reduce it to a less than significant level. Moreover, any lighting plan proposed under this alternative would also be required to undergo review and approval by the City's Design Review Board.

The omission of the replacement of the bridge deck has no effect on the aesthetics comparison between the proposed Project and Alternative 2. Eliminating the field lighting as analyzed in Alternative 2 would eliminate the need for mitigation of potentially significant field lighting impacts, but it would not significantly reduce any potentially significant impacts of the proposed Project because mitigation is provided in Chapter 5 that successfully reduce them to a less than significant level. Therefore, the impacts to lighting and aesthetics of Alternative 2 would be *similar* to or *less than* those of the proposed Project.

Air Quality (similar)

Alternative 2 would not eliminate or significantly reduce any air quality impacts of the proposed Project. The impact analysis provided in Chapter 5 of this document identified one potentially significant air quality impact associated with construction. This impact is reduced to a less than significant level through the implementation of feasible control measures for construction emissions identified by the BAAQMD. Neither the elimination of night lighting of the outdoor field nor the elimination of bridge-deck replacement would reduce or eliminate this impact; construction on the Project site under Alternative 2 would still result in potentially significant impacts associated with construction activities, necessitating similar measures in order to mitigate.

Therefore the impacts to air quality under Alternative 2 would be *similar* to those of the proposed Project.

Biological Resources (similar or less than)

The biological resources analysis in Chapter 6 of this EIR identified potentially significant impacts associated with both the bridge construction and the night lighting of the outdoor field. Noise and water quality impacts from bridge construction activities were determined to pose a potentially significant threat to listed anadromous fish species (coho salmon and steelhead), California clapper and black rail, common and special-status nesting birds and nesting raptors. Bridge construction was also determined to result in potentially significant impacts to the top of the creek bank, which is under CDFG jurisdiction. Lighting of the sports field was determined to result in potentially significant impacts to wildlife habitat in the North Fork of Gallinas Creek. Chapter 7 of this EIR includes mitigation measures that address all potentially significant impacts and reduce them to a level considered less than significant.

Bridge construction-associated mitigation measures included for the proposed Project require special measures and procedures to be taken in order to fully mitigate the impacts associated with its construction, including requiring construction activities to occur between certain dates and within a set amount of time, designing the required SWPPP and SWMP to ensure that no significant impacts to the water quality of the North Fork of Gallinas Creek would occur, and obtaining a 1602 Lake and Streambed Alteration Agreement from the CDFG, which details authorized activities and provides specific terms and conditions for bridge construction.

Lighting-associated mitigation measures that address the potentially significant affects of night lighting on wildlife habitat in the creek and the California clapper and black rails include the establishment of a lighting curfew of 10 p.m. for night time sporting events and the requirement that the lighting of the sports field be focused to ensure that no direct lighting spills onto off-site areas.

The elimination of night lighting and bridge deck replacement under Alternative 2 would eliminate the need for the mitigation measures summarized above and described in detail in Chapter 7 of this EIR. However, Chapter 7 identified other potentially significant construction and operation impacts to biological resources that also require mitigation, such as the requirement to conduct pre-construction and nesting surveys for special status and nesting birds, stipulations for proper berm and levee maintenance, and the establishment of buffer zones and a perimeter fence for other special-status species that may utilize the site. These measures would still be required under Alternative 2, as their related impacts would not be avoided or substantially lessened with the elimination of night lighting and bridge deck replacement. Moreover, the elimination of night field lighting and bridge deck replacement under this alternative would eliminate the need to provide mitigation for their associated impacts, but the elimination of these elements of the Project would not significantly reduce the potentially significant impacts of the proposed Project, since the mitigation measures included in Chapter 7 successfully reduce their associated impacts to less than significant levels.

Alternative 2 would not significantly reduce any potentially significant impacts of the proposed Project but would eliminate the need to mitigate impacts to biological resources associated with night time lighting and bridge construction. Therefore, associated impacts to biological resources would be *similar* to or *less than* the proposed Project.

Cultural Resources (similar)

As discussed above, the cultural resources analysis in Chapter 8 of this EIR identified the potential discovery of historic or prehistoric materials as a potentially significant impact and provides mitigation that will reduce this impact to a level considered less than significant.

The elimination of night lighting of the sports field and replacement of the bridge deck would have no effect on the potential discovery of historic or prehistoric materials during construction activities; therefore, Alternative 2 would have potential impacts upon cultural resources that are *similar* to those of the proposed Project.

Geology and Soils (similar)

As discussed above, the geotechnical study identified Bay Mud soils on the Project, which is not suitable for at-grade foundation support. Additionally, the geotechnical study determined that additional fill is not appropriate for the site due to the potential for induced settlement on the site. This condition is identified as a potentially significant impact in the geology and soils analysis in Chapter 9 of this EIR, which provides a mitigation measure requiring the Applicant to adhere to all recommendations of the geotechnical analysis prepared by JCH. This mitigation measure successfully reduces the Project's impact regarding geology and soils to a level considered less than significant.

Under this alternative, the building would be reduced in size; however any building on the Project site would be required to undergo a geotechnical analysis similar to the proposed Project. Such an analysis would likely also identify the presence of Bay Mud as unsuitable to support building foundations, thereby requiring similar measures provided in Chapter 9 for the proposed Project. Construction activities under this Alternative would also be required to abide by professional geotechnical engineering recommendations pertaining to foundations and fill materials; therefore, Alternative 2 would have potential impacts upon geology and soils that are *similar* to those of the proposed Project.

Hazardous Materials and Safety Hazards (similar or less than)

The hazards discussion in Chapter 9 of this EIR discusses both hazardous materials and safety hazards that could possibly result from Project approval. In terms of exposure to hazardous substances, emergency response/evacuation plan, or wild land hazards, the proposed Project would result in either no impact or a less than significant impact. The Project site is not listed on any hazardous materials site; it would not include the use, transport or disposal of hazardous materials; would not interfere with an emergency response plan; and would not pose a significant risk in terms of wild land hazards.

The airport safety review of the proposed Project did identify potential impacts with respect to two issues: 1) the maximum estimated concentration of people (including children and the elderly) that the Project would attract is 216, which exceeds by 16 the single-acre criterion of 200 people and may be considered a potential hazard due to the site's location on an airport, and 2) the site plan analysis that accompanied the airport safety review determined that elements of the proposed buildings would have heights that would extend into the San Rafael Airport's navigable airspace. The first of these issues can be fully mitigated through the addition of recommended risk-reduction design features into the Project and the second issue can be fully mitigated through the elimination of the flight hazards that the review identified in the manner recommended by the mitigation measure. Implementing the prescribed measures would ultimately reduce these impacts to a less than significant level.

Alternative 2 would not eliminate or significantly reduce any of the Project's impacts to hazards. The potential impact associated with the exposure to hazardous substances, emergency response/evacuation plan, or wild land hazards, would be the same as the proposed Project; i.e. less than significant. It is possible that the elimination of night lighting of the sports field (and the corresponding elimination of night-time outdoor sporting activities) and the reduction in size of the indoor sports facility would reduce the maximum estimated concentration of people attracted by the Project due to the reduced capacity of the indoor sports facility and the elimination of outdoor events at night. However, the proposed Project only exceeds the maximum estimated concentration by 16 people and mitigation is included that would successfully reduce the impact to a level considered less than significant; therefore, Alternative 2 would not eliminate or significantly reduce these potential impacts.

Regarding the existence of flight hazards associated with the proposed Project, the elimination of night-time field lighting under this alternative would eliminate one potential hazard source associated with the proposed Project. However, the proposed Project's lighting plan would be required to undergo review and approval by the City's DRB. Moreover, mitigation in Chapter 11 prohibits lights to be directed toward the horizon and, in addition to approval by the DRB, requires the field lights to be flight checked to ensure that Project lighting does not create glare during landings and take-off. These measures would reduce potentially significant lighting hazards of the Project to a level considered less than significant. The Project airport safety hazard analysis identified hazards to flight associated with elements of the Project other than night lighting; including the height of the proposed structures and parking stall design. Under Alternative 2, the structure would be reduced in size, but its height would be the same as the proposed Project thereby requiring mitigation similar to that provided for the proposed Project. It is possible that reducing the building size would allow a reconfiguration of the parking area such that there are no potentially significant automobile related flight hazard impacts; however, this determination is beyond the scope of this analysis.

Mitigation is provided in Chapter 11 that fully reduce any of the proposed Project's hazard impacts to a level considered less than significant. Implementation of Alternative 2 would eliminate the need to mitigate hazard impact associated with field and building lighting; however, since these impacts can be mitigated to a less than significant level under the proposed Project, eliminating night lighting of the soccer field would not significantly reduce any potential safety impacts of the proposed Project, but would eliminate the need for additional mitigation. For these reasons, the impact of Alternative 2 would be *similar* to or *less than* that of the proposed Project.

Hydrology and Water Quality (similar)

The hydrology analysis in Chapter 11 of this EIR identified two potentially significant impacts of the proposed Project. One is associated with the Project's potential to adversely impact water quality and waste discharge requirements from construction and operational activities, and the other is the potential for flooding due to levee failure due to the site's location within a 100-year floodzone and its protection from flooding to the north, west and east by flood control levees. Mitigation for potential water quality impacts require the preparation of an Erosion Control Plan, SWPPP and SWMP as required under the City's NPDES permit, and the proper maintenance of on-site drainage swales and paved areas. The mitigation for the potential impact regarding development within a 100-year floodzone entails wet flood-proofing of all portions of the proposed building below +7' NGVD and requiring the construction plans to be reviewed and signed by a registered engineer. Implementing these measures reduce the potential for flooding at the Project site to a less than significant level.

The conditions at the Project site with respect to its location in a flood zone and its protection by the levee system are not likely to change with the elimination of night lighting and bridge deck replacement under Alternative 2. Additionally, the smaller building under this alternative would still require wet flood-proofing up to +7' NGVD. Therefore, Alternative 2 would not eliminate or significantly reduce any adverse effects to hydrology and water quality of the proposed Project. For these reasons, the impacts of Alternative 2 would be *similar* to those of the proposed Project.

Noise (similar or less than)

The noise analysis in Chapter 12 of this EIR identified three noise impacts: Operational noise, general construction noise, and noise associated with pile driving. These impacts are fully reduced to a level considered less than significant by mitigation measures included in the analysis. Operation noise is mitigated via a recommended adjustment of the operational hours of the facility to close at 9 p.m. Sunday through Thursday, and 10 p.m. Friday and Saturday if the City receives noise complaints from the neighbors to the south. Construction noise is mitigated by imposing time restrictions on construction activities and engine noise controls on construction equipment. Pile driving noise is addressed through “quiet” procedures provided in the analysis.

The analysis of the proposed Project’s operational noise analysis determined that nighttime operational noise from outdoor nighttime soccer games may reach levels of 41 dBA (L_{eq}), which would exceed the City’s nighttime noise limit of 40 dBA (L_{eq}), thereby affecting the homes closest to the site between the hours of 9 p.m. and midnight during this time. Eliminating the field lighting and adjusting the hours of operation to close at 10 p.m., as this alternative assumes, would eliminate the need for additional mitigation measures to address potential night time noise impacts; however, since mitigation measures are provided in Chapter 12 that successfully reduce these impacts to a level of less than significant, the elimination of the need for mitigation would not significantly reduce a potentially noise significant impact.

Alternative 2 would eliminate the replacement of the bridge deck crossing the creek at the Project site’s approach road, which would eliminate the potential noise impact associated with pile driving during construction. The elimination of the bridge deck replacement under Alternative 2 may eliminate the potentially significant impact associated with pile driving; however, adequate mitigation is provided to reduce this impact to a less than significant level. For this reason, Alternative 2 would not significantly reduce this identified impact of the Project.

Based on the above discussion, Alternative 2 would eliminate the need for mitigation of some potentially significant noise impacts of the proposed Project. However, the proposed Project’s implementation of these noise mitigation measures will result in reducing any potentially significant noise impacts to a level considered less than significant; therefore,

although Alternative 2 would not significantly reduce potentially significant noise impacts of the proposed Project, it would eliminate the need for some mitigation. Therefore, Alternative 2 would result in noise impacts that are *similar* to or *less than* the proposed Project.

Traffic and Circulation (similar)

The Project traffic analysis provided in Chapter 13 did not identify any potentially significant impacts associated with the proposed Project. The trip generation analysis determined that no study roadway or intersection would deteriorate below the minimum LOS standard. As stated in the Project Description and in Chapter 13, the Applicant proposes to replace the deck of the existing one-lane bridge that crosses Gallinas Creek at the Project approach with a new wider deck providing two 10-foot wide travel lanes and a 5-foot wide bicycle/pedestrian lane.

Eliminating the nighttime lighting of the outdoor sports field and reducing the size of the indoor sports facility building may reduce the overall number of daily users at the site, thereby decreasing the trip generation, particularly during the evening hours. However, as described above, no impacts were associated with Project trip generation; therefore, reducing the Project's trips would not eliminate or significantly reduce an identified impact of the proposed Project.

Eliminating the bridge deck replacement would leave the one-lane crossing remaining. However, as discussed in Chapter 13: *Transportation and Traffic*, and Chapter 14: *Other Environmental Effects*, the Fire and Police Departments have determined that the existing bridge provides for adequate access and safety. Moreover, the reduced size of the indoor sports facility and elimination of night time field lighting would likely reduce the overall use intensity of the site under this alternative, making the ease of passage that a new bridge deck would provide less beneficial.

Alternative 2, with its reduced indoor recreational building size and its elimination of the night time field lighting, would result in fewer overall users and fewer trips generated than the proposed Project. However, no significant traffic or circulation impacts were identified for the proposed Project that require mitigation. Therefore, Alternative 2 would not avoid or significantly reduce any impact of the proposed Project and this alternative would have traffic impacts that are *similar* to the proposed Project.

Other Environmental Effects (similar)

Chapter 14 of this EIR provides an analysis of "other effects" that could result from implementation of the proposed Project. Chapter 14 provides an analysis of the following: Agricultural Resources, Mineral Resources, Population & Housing, Public Services (Police, Fire, Schools, etc.), Recreation, Utilities & Services, Cumulative Impacts and Growth Inducing Impacts. These issues were discussed in a single chapter rather than assigning separate chapters for each issue because the details of the proposed Project suggested that there would be few, if any, impacts in these areas. The resulting analysis in Chapter 14 bears

this out: the proposed Project would not result in any potentially significant impacts in these areas.

The reduction in buildings size of the indoor recreation facility, the elimination of nighttime lighting of the outdoor sports field and the omission of the bridge deck replacement, as analyzed under Alternative 2, would not change the impact determination regarding the issues discussed in Chapter 14. Therefore, Alternative 2 and the proposed Project would have *similar* impacts to these issues.

ALTERNATIVE 3—ALTERNATIVE LOCATION

The discussion of alternative locations for a proposed project is addressed in CEQA Guidelines 15126.6(f)(2)(A), which states, “The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered in the inclusion of the EIR.” Additionally, CEQA Guidelines 15126.6(c) states that, “The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.”

The San Rafael Airport has a land use designation of Airport/Recreation on the *General Plan 2020 Land Use Map* (General Plan Exhibit 12). The proposed Project is recreational in nature and conforms to the land use designation of the site; as described throughout this document, the Project site is subject to a Master Use Permit and restrictive covenants that permit a narrow range of uses. The current restrictive covenants do not permit the indoor sports facility proposed by the Project; however, as part of the Applicant’s application submission, the Applicant also requests to amend the Master Use Permit to allow this use. The analysis provided in this EIR has determined that the proposed Project would conform well to the land use designation and additional constraints of the site, provided the recommended mitigation measures contained in this EIR are properly implemented. Moreover, McInnis Park is located to the northwest of the site, across the North Fork of Gallinas Creek and provides recreation activities similar to and compatible with the proposed uses on the airport site.

The General Plan includes the development of a project such as this as a goal in its *Parks and Recreation* element. GP Policy **PR-13** calls for the development of multi-sport athletic fields to address community needs. Therefore, notwithstanding the need to amend the Project site’s Master Use Permit, the proposed Project furthers the goals of the General Plan. However, a review of the General Plan Land Use Map reveals that there are few, if any, areas within the City of San Rafael that could accommodate this Project. The project description information provided in **Appendix B** includes a list compiled by the Applicant of 14 alternative sites in Marin County that were considered prior to submitting the development application for this

site. None proved to be suitable to obtain the Applicant's basic objectives. Additionally, the location of McInnis Park to the north of this Project site provides the potential opportunity for combined recreational traffic trips to the vicinity. The environmental analysis in this EIR has determined that all potentially significant impacts of the proposed Project at this site can be successfully mitigated to a less than significant level, and there would be no significant and unavoidable impacts that would require the approval of a Statement of Overriding Considerations in order to approve the Project. Moreover, the Applicant does not possess development rights on another site in the City; therefore, if the Applicant were to be required to find an alternative site, it is likely that the Applicant would withdraw the development application.

If a feasible alternative location were to be identified for this Project, it would be required to undergo the same level of environmental analysis this EIR provides for the proposed Project site. Identifying such potential affects is beyond the scope of this analysis; however, this analysis shows that there would be no significant and unavoidable impacts of constructing the Project on the airport site; all potentially significant impacts can be mitigated to a level considered less than significant. For this reason, there are no impacts that would be avoided or mitigated by proposing an alternative site location. Therefore, Alternative 3, "alternative location" was *considered but rejected* as infeasible.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The above analysis of Alternative 3—Alternative Location determined that it would be an infeasible alternative due to the fact that no suitably designated alternate location exists, the Applicant does not possess development rights to another site, and if a suitable alternate location were to become available, a full CEQA analysis would be required that may result in additional potentially significant impacts not identified in this EIR. For this reason, Alternative 3 is deemed unfeasible. Therefore, the environmentally superior alternative is either the Alternative 1—No Project Alternative, Alternative 2—Reduced Intensity Alternative, or the proposed Project; however, as the analysis above demonstrates, no alternative considered in this analysis significantly reduces any potentially significant impact of the proposed Project.

As discussed, Alternative 1—No Project is defined as the practical result of non-approval of the proposed Project, based on the site's land use designations and development parameters. The analysis of this alternative highlights the fact that the site's land use designations, Master Use Permit requirements and restrictive covenants define a narrow set of development standards and uses that would be approved. Therefore, the "practical result" of non-approval of the proposed Project would be an eventual development application very similar to that which is currently proposed. However, as discussed in this chapter, the description of the "no project" alternative assumed that a future proposal would not require an amendment to the Project site's PD District or Master Use Permit, and therefore eliminated the construction of the building on the Project site. The analysis of Alternative 1 determined that it would not

result in significantly reducing any of the Project's potentially significant impacts. However, the analysis of Biological Resources, Geology and Soils, Hazardous Materials and Safety Hazards, Hydrology and Water Quality, and Noise determined that the implementation of Alternative 1 would eliminate the need for some mitigation measures that the analysis of the Project recommends. Therefore, due to the fact that Alternative 1 would require fewer mitigation measures in six discussion areas leads to the determination that Alternative 1 would have fewer environmental impacts than the proposed Project.

According to CEQA Guidelines Section 15126.6(d) the range of alternatives to a project considered feasible must include whether such an alternative meets most of the Project's basic objectives. Alternative 1 would eliminate the construction of the indoor sports facility; however, doing so would not allow the Applicant to meet the stated objective of: a) including three or more independent separate sports operators in order to serve a broad cross-section of the community, which is needed for Project economic viability; or b), the stated objective of devoting at least 35 percent of indoor space to high revenue sports in order to subsidize soccer, which generates insufficient revenue to remain commercially viable. Although CEQA does not permit the consideration of economic impacts of a Project in an environmental analysis, the Applicant's stated objectives require a mix of indoor sports activities in order to remain a commercially viable Project. Eliminating the indoor sports facility would preclude a necessary objective of the Project as well as the Project's overall viability.

The analysis of Alternative 2—Reduced Intensity would have impacts that are largely similar to the proposed Project, in that it would not result in significantly reducing any of the Project's potentially significant impacts. However, the analysis of Aesthetics, Biological Resources, Hazardous Materials and Safety Hazards, and Noise determined that the implementation of Alternative 2 would eliminate the need for some mitigation measures that the analysis of the Project recommends. Therefore, the fact that Alternative 2 would require fewer mitigation measures in five discussion areas leads to the determination that Alternative 2 would have fewer environmental impacts than the proposed Project.

Under Alternative 2 there would be no night time lighting of the outdoor sports field. The Applicant's Project Objectives provided in Chapter 3 of this EIR and again at the beginning of this chapter include a specific objective of the Project to provide three to four hours of daily exclusive adult play time at the soccer facility and it is intended that the evening-lit outdoor field be utilized for these activities. This is because the soccer operation is not economically suitable as a youth only facility and adult fees are required to offset low youth fees. Eliminating the night time lighting of the outdoor playing field would eliminate the Applicant's ability to operate the facility because adults would not be able to use this facility in the evening. Although CEQA does not permit the consideration of economic impacts of a Project in an environmental analysis, the Applicant's stated objectives require night-time outdoor adult use in order to remain a commercially viable Project. Alternative 2 would preclude a necessary objective of the Project and render it infeasible.

Based on the analysis of all three alternatives, ***the environmentally superior alternative would be Alternative 1—No Project because it eliminates the need for mitigation in six of the environmental discussion topics in this EIR.*** However, Alternative 1 would not meet key objectives of the Project required to ensure economic viability, such as the need to provide a mixture additional sports activities to offset the low revenue generated by indoor soccer. Therefore, while this alternative is the environmentally superior option, it is not feasible because it fails to meet crucial Project objectives. A discussion of the analysis of project alternatives is provided in CEQA Guidelines Section 15126.6, which states that, “if the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.”².

Alternative 2 would also eliminate the need for mitigation in five of the environmental discussion topics in this EIR. However, like Alternative 1, the elimination of night time lighting under Alternative 2 would preclude the Project’s stated objective of providing two to three hours of adult-only play in the evenings. Similar to the objectives discussed above, the provision of adult only play is necessary in order to make the Project commercially viable, as children-only soccer use does not generate sufficient revenue. Therefore, although this alternative would be environmentally superior to the proposed Project, it fails to meet the basic objectives of the Project and is, therefore, rejected as infeasible.

As discussed throughout this analysis, none of the alternatives analyzed would significantly reduce a potentially significant impact of the proposed Project because mitigation measures provided throughout this analysis would successfully reduce any potentially significant impacts of the project to a level considered less than significant and there are no impacts that considered significant and unavoidable. Therefore, the proposed Project would be the ***preferred alternative*** based on the analysis in this EIR.

² CEQA Guidelines, Section 15126.6(e)(2).

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REPORT AUTHORS

PRIMARY ENVIRONMENTAL ANALYSIS

Lamphier-Gregory

1944 Embarcadero
Oakland, CA 94606
Tel: (510) 535-6690

Joan Lamphier, Principal

Jason Chafin, Associate Planner

NOISE ANALYSIS

Geier & Geier Consulting, Inc.

P.O. Box 5054
Berkeley, CA 94705-5054
Tel: (707) 526-5010

Valerie Geier, Principal

BIOLOGICAL RESOURCES

Monk & Associates

1136 Saranap Ave.
Suite Q
Walnut Creek, CA 94595
Tel: (925) 947-4867

Geoff Monk, Principal

Hope Kingma, Biologist

AIRPORT HAZARDS ANALYSIS

Mead & Hunt, Inc.

133 Aviation Blvd., Ste. 100
Santa Rosa, CA 95403-8279
Tel: (707) 526-5010

Maranda Thompson, Airport Planner

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