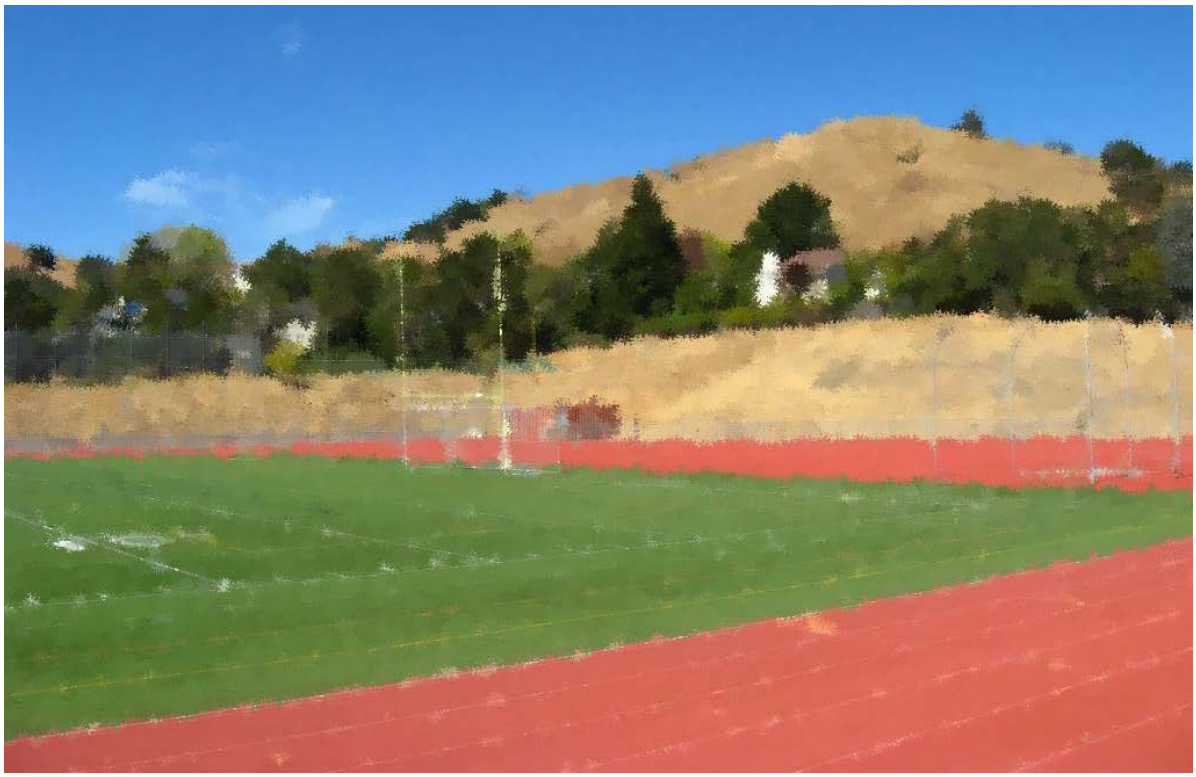

San Marin High School Stadium Lights Project

Final Environmental Impact Report
SCH#2016082068

prepared by

Novato Unified School District
1015 7th Street
Novato, California 94945
Contact: Yancy Hawkins, Assistant Superintendent of Business and Operations

prepared with the assistance of
Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

May 2017

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Environmental Scientists Planners Engineers
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Executive Summary

This section summarizes the characteristics of the project as well as the environmental impacts, mitigation measures, and residual impacts associated with implementation of the project.

Project Synopsis

Project Proponent

Novato Unified School District
1015 7th Street
Novato, California 94945

Project Description

The Novato Unified School District ("the District") proposes to install permanent stadium lighting that would consist of a modern LED lighting system that would minimize the glare of the stadium lights and reduce the amount of illumination outside of the stadium fields compared to older lighting systems. The lighting installation at San Marin High School's stadium would generally consist of two sets of poles. The first set of poles would support lighting fixtures for illuminating the field during sports competitions, practices, and other events. These poles would be approximately 80 feet tall and would be installed at eight locations, arranged as four poles spaced evenly along each long side of the athletic field. The second set of poles would support lighting fixtures for illuminating the field during post-event egress, clean-up, and during sports team practices. These poles would be up to approximately 30 feet tall and would be installed at up to 18 locations throughout the athletic field site to provide adequate lighting for safe egress.

The current public address system creates unintended noise that is not properly directed within the stadium. Basic improvements to the existing public address system would be installed at the stadium. The upgraded public address system would consist of speakers mounted on up to 18 poles, each approximately 30 feet tall. These poles would be located behind the bleachers on either side of the athletic field. A public address speaker may be mounted on a pole that also supports an egress lighting luminaire. The speakers would be directed towards the spectators and the field, and they would be designed to minimize the amount of sound leaving the stadium. The public address system would be controlled by an automixer/digital signal processor (DSP) and a control panel located in the press box. The DSP would be set to limit the sound level to conform to the requirements of the applicable local noise ordinance.

As described in Chapter 2, *Project Description*, subsection 2.4.1.6, Proposed Schedule of Events, the new stadium lighting system would allow for the expansion of evening and nighttime activities at the stadium site. These activities would generally end no later than 9:30 PM, and the main competition-level lights would be turned off approximately 15 minutes after the end of a scheduled activity. The proposed schedule of events per school year ~~and the associated start and end times for both lighting and public address system use are~~ is shown in Table 3 in Chapter 2. While the timing of some events would shift to evening and nighttime hours, the frequency of events per school year would not significantly change from existing usage. The stadium lights would not be used for community or non-school activities.

Areas of Controversy

Areas of controversy known to the lead agency include the potential for public safety impacts related to possible off-site activities during games; light and glare impacts associated with the new lighting system; crowd and PA system noise in the evening hours for nighttime events, practices, and games; and additional evening traffic and parking impacts associated with nighttime events. A summary of comments received during the scoping process is included in Table 2.

Project Objectives

The objectives of the proposed project are to:

1 Provide extended availability of the athletic fields to improve academic performance by minimizing early class dismissal and missed instructional time for student athletes.
2 Allow for the scheduling of games at times when students, parents, and community members can more easily attend the events, which would increase school spirit and increase revenue from ticket purchases.
3 Provide nighttime opportunities for students to gather to cheer on their team offering an alternative to going to parties or other unhealthy recreational activities, in an alcohol-free environment.
4 Improve athlete safety by providing superior lighting conditions during evening practices and sports events.
5 Improve safety by minimizing incompatible uses from sharing the field (e.g.: lacrosse teams and track/field teams practicing at the same time means that lacrosse balls may hit runners on the track).
6 Improve the public address system to focus and contain sound within the stadium.

Alternatives

Pursuant to CEQA Guidelines §15126.6(c), the District considered several alternative off-site facilities to host nighttime events and practices. Most of these alternate sites were rejected as infeasible during the project's scoping process. All of the off-site alternatives would require student athletes, coaches, and support staff to be transported to and from the site for games and practices. The off-site alternatives range in distance from adjacent to San Marin High School (O'Hair Park) to approximately seven miles away (Hamilton Site). With the exception of O'Hair Park which is adjacent to the school, the use of alternative sites for games and practices would necessitate cars and buses to transport student athletics, coaches, and support staff from San Marin High School to the alternative site. Therefore, the off-site alternatives would result in additional traffic, traffic noise, and mobile air pollution and greenhouse gas (GHG) emissions compared to the proposed project. For this reason and the additional reasons detailed in Chapter 6, *Alternatives*, these alternative sites were considered but rejected as infeasible.

Three alternatives to the proposed project were chosen for detailed analysis as follows:

- Alternative 1: No Project
- Alternative 2: Stadium Lighting at Novato High School
- Alternative 3: Portable Lighting Systems

One alternative that was rejected as infeasible in the Draft EIR is presented in Chapter 6, *Alternatives*, in further detail for informational purposes in response to public comments received on the Draft EIR. The College of Marin Indian Valley Campus (IVC) Existing Fields alternative is now presented as Alternative 4 to provide additional detail about the potential impacts of that alternative. However, the conclusion in the Draft EIR that the IVC Existing Fields alternative would be infeasible remains valid.

The No Project Alternative assumes that the proposed project is not implemented and the project site remains in its current condition. Currently, there are no stadium lights and the PA system does not focus sound on the field.

Alternative 2 would involve the installation of new lighting at the Novato High School stadium instead of San Marin High School. This stadium would host nighttime events for both Novato and San Marin high schools.

Under Alternative 3, stadium lighting for night games at San Marin High School would be provided by portable lighting systems that are powered by diesel generators. The portable lighting systems would only be used for nighttime football, soccer, track, and lacrosse games. Practices would continue to meet during daytime hours and would not use the portable lighting system.

None of the development alternatives would eliminate the unavoidably significant noise impact associated with nighttime football games. Also, all of the development alternatives would introduce additional or more severe impacts compared to the proposed project for certain resource areas. For example, Alternative 2 would result in increased impacts to air quality, greenhouse gas emissions, noise, and transportation and traffic, and Alternative 3 would result in increased impacts to air quality, ~~and~~ greenhouse gas emissions, and noise. Among the considered alternatives to the proposed project, the Novato High School Stadium Lighting alternative (Alternative 2) is the environmentally superior alternative. Although the No Project Alternative would be the environmentally superior alternative, CEQA requires that the environmentally superior alternative be chosen from among the development alternatives (CEQA Guidelines §15126.6(e)(2)).

Refer to Chapter 6, *Alternatives*, for the complete alternatives analysis.

Summary of Impacts and Mitigation Measures

Table 1 includes a brief description of the environmental issues relative to the proposed project, the identified environmental impacts, proposed mitigation measures, and residual impacts. Impacts are categorized by significance. *Significant and unavoidable* adverse impacts require a statement of overriding considerations to be issued per CEQA Guidelines §15093 if the project is approved. *Significant but mitigable* impacts are adverse impacts that can be feasibly mitigated to less than significant levels and which require findings to be made under of the CEQA Guidelines §15091. *Less than significant* impacts would not exceed significance thresholds and therefore would not require mitigation.

The summary table addresses the issues of aesthetics, air quality, cultural resources, greenhouse gas emissions, noise, and transportation/traffic. Impacts related to all other resource areas were determined to be less than significant in the Initial Study (Appendix A).

Table 1 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

Impact	Mitigation Measure	Residual Impact
Aesthetics		
Impact AES-1 The addition of lights and light poles at the stadium would incrementally alter views of and through the stadium site. However, because light poles would not substantially obstruct views of scenic resources, impacts to scenic vistas would be less than significant.	None	Less than significant without mitigation
Impact AES-2 The proposed light poles would incrementally alter daytime aesthetic conditions at the stadium site. However, light poles would not conflict with the visual character of the stadium's vicinity and would have a negligible effect on overall visual quality. Impacts on visual character and quality would be less than significant.	None	Less than significant without mitigation
Impact AES-3 The proposed project would introduce permanent stadium lighting used for sporting competitions, practices, and other events on a site that lacks existing light sources. By design, the stadium lighting would be focused on the athletic field and would minimize light trespass. However, lighting could spillover exceeding the District's standards for illuminance at property lines facing residences. Lighting and glare impacts would be potentially significant, but mitigable.	**AES-3 Photometric Study.** The District shall retain a qualified lighting consultant to prepare a photometric study in accordance with industry standards that estimates the vertical and horizontal foot-candles generated by the proposed stadium lighting on the football field and at the boundaries of the stadium site. The District shall coordinate with the lighting consultant to ensure that final design of the lighting system does not allow illuminance to exceed two horizontal or vertical foot-candles at any specific point on the site boundaries (i.e., at the perimeter of the stadium). In order to meet this standard for light trespass, the District may adjust the positioning of light fixtures alongside the football field, their shielding or intensity, or other design features. Final stadium lighting plans shall show light fixtures that generate no greater than two foot-candles at the site boundaries.	Less than significant
Impact AES-4 The proposed stadium lights would be visible from nearby residences and could generate light intensity in excess of the CIE's international standards for the E3 lighting zone at residential property lines facing the stadium. Impacts from glare would be potentially significant, but mitigable.	**AES-4 Photometric Study and Minimization of Glare**. The District shall retain a qualified lighting consultant to prepare a photometric study in accordance with industry standards that estimates the amount of discomfort glare to which nearby residents would be subjected when facing the proposed stadium lights. The photometric study shall use candelas as a measure of luminous intensity. The District shall coordinate with the lighting consultant to ensure that discomfort glare does not exceed 10,000 candelas at residential property lines facing the stadium. In order to meet this standard for glare, the District may adjust the positioning of light fixtures alongside the football field, their shielding or intensity, or other design features. Final stadium lighting plans shall show light fixtures that generate glare no greater than 10,000 candelas at	Less than significant

Impact	Mitigation Measure	Residual Impact
	surrounding residences.	
Impact AES-5 The proposed stadium lights would be shielded and the brightest lights would be downward-facing to reduce light trespass. Upward-facing lights would only be used ~~for short durations to illuminate airborne objects such as footballs during punts and kickoffs~~ during games and would be designed to provide only the minimum amount of illumination necessary to see airborne objects in the stadium. Therefore, the project would not substantially increase sky glow. Impacts from sky glow would be less than significant.	None required	Less than significant without mitigation
Air Quality		
Impact AQ-1 Project construction would generate temporary increases in localized air pollutant emissions. These emissions would not contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.	None required	Less than significant without mitigation
Impact AQ-2 The project would result in an increase in operational air pollutant emissions from development of stadium lighting at San Marin High School. However, emissions would not result in net increase in any criteria pollutant for which the project region is in non-attainment under applicable federal or state ambient air quality standards and would not expose sensitive receptors to substantial pollutant concentrations; therefore, this impact would be less than significant.	None required	Less than significant without mitigation
Cultural Resources		
Impact CR-1 Construction of the proposed project would involve surface excavation, which has the potential to unearth or adversely impact previously unidentified archaeological resources. Impacts would be less than significant.	~~**MM**~~ **CR-1a Retain A Qualified Principal Investigator.** A qualified principal investigator, defined as an archaeologist who meets the Secretary of the Interior's Standards for professional archaeology, shall be retained to perform all mitigation measures related to archaeological and historical resources (hereafter principal investigator). ~~**MM**~~ **CR-1b Worker Environmental Training Program.** At the project kickoff and before construction activities begin, the principal investigator or his/her designee will provide training to construction personnel on information regarding regulatory requirements for the protection of cultural resources. As part of this training, construction personnel will be briefed on proper procedures to follow should unanticipated cultural resources discoveries be made during construction. Workers will be provided contact information and protocols to follow in the event that	Less than significant

Impact	Mitigation Measure	Residual Impact
	inadvertent discoveries are made. If necessary, the project archaeologist can create training materials that can be shown to new workers and contractors to provide continuous training throughout the life of the project. ~~MM~~ **CR-1c Unanticipated Discovery of Archaeological Resources.** If unanticipated cultural deposits are encountered during any phase of project construction or land modification activities, work shall stop and Novato Unified School District (NUSD) shall be notified. The principal investigator shall assess the nature, extent, and potential significance of any cultural remains. If the resources are determined to be Native American in origin, the principal investigator will consult with NUSD to begin Native American consultation procedures, as appropriate. If the discovery is determined to be not significant, work will be permitted to continue in the area. Potentially significant resources may require a Phase II subsurface testing program to determine the resource boundaries within the project site, assess the integrity of the resource, and evaluate the site's significance through a study of its features and artifacts. If, in consultation with NUSD, a discovery is determined to be significant, a mitigation plan should be prepared and implemented in accordance with state guidelines. If the resource cannot be avoided, a data recovery plan should be developed to ensure collection of sufficient information to address archaeological and historical research questions, with results presented in a technical report describing field methods, materials collected, and conclusions. Any cultural material collected as part of an assessment or data recovery effort should be curated at a qualified facility.	
Impact CR-2 Construction of the proposed project would involve surface excavation. Although unlikely, these activities have the potential to unearth and/or impact paleontological resources. Impacts would be less than significant with mitigation incorporated.	~~MM~~ **CR-2a Retain a Project Paleontologist.** Prior to initial ground disturbance, ~~the applicant~~ NUSD shall retain a project paleontologist, defined as a paleontologist who meets the SVP standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources. A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year. ~~MM~~ **CR-2b Worker Environmental Training Program.** Prior to the start	Less than significant

Impact	Mitigation Measure	Residual Impact
	of construction, the project paleontologist or his or her designee, shall conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The worker training shall be fulfilled at the time of a preconstruction meeting at which a qualified paleontologist shall attend. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources. ~~**MM**~~ **CR-2c Unanticipated Discovery of Paleontological Resources.** If unanticipated paleontological resources are discovered during any phase of project construction or land modification activities, work shall stop and NUSD shall be notified. The find shall be recovered under the supervision of the project paleontologist. Typically fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. Once salvaged, significant fossils should be identified to the lowest possible taxonomic level, prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the University of California Museum of Paleontology), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the project paleontologist.	
Impact CR-3 Construction of the proposed project would involve excavation, which has the potential to unearth or adversely impact previously unidentified human remains. Impacts would be less than significant with mitigation incorporated.	~~**MM**~~ **CR-3 Unanticipated Discovery of Human Remains.** If human remains are discovered, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the county coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner will notify the NAHC. The NAHC will determine and notify a MLD. The MLD will complete the inspection of the site within 48 hours of notification and may	Less than significant

Impact	Mitigation Measure	Residual Impact
	recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.	
Impact CR-4 Construction of the proposed project would involve subsurface excavation, which has the potential to impact previously unidentified tribal cultural resources. Impacts would be less than significant with mitigation incorporated.	~~**MM**~~ **CR-4 Unanticipated Discovery of Tribal Cultural Resources.** In the event that a previously unidentified cultural resource is determined to be of Native American origin, the principal investigator will consult with NUSD to begin or continue Native American consultation procedures. If, in consultation with NUSD, a discovery is determined to be a tribal cultural resource and thus significant under CEQA, a mitigation plan should be prepared and implemented in accordance with state guidelines and in consultation with Native American groups. If the resource cannot be avoided, a mitigation plan should be developed to address tribal concerns.	Less than significant
Greenhouse Gas Emissions		
Impact GHG-1 The project would generate GHG emissions during construction and long-term operation. Project-generated emissions would not hinder or delay achievement of state GHG reduction targets established by AB 32 and the project would be consistent with the City's Climate Change Action Plan. Therefore, the project's impact to climate change would be less than significant.	None required	Less than significant without mitigation
Noise		
Impact N-1 Noise generated by construction of the project would occur within daytime hours that are exempted from the allowable exterior noise standards in the City of Novato Municipal Code. Therefore, construction noise would not substantially affect nearby sensitive receptors, and impacts would be less than significant.	None required	Less than significant without mitigation
Impact N-2 Noise from crowds and the proposed PA system at athletic events on the field would not exceed the threshold of 75 dBA at the sensitive receptors; however, varsity football game noise would generate L5 noise levels that exceed the threshold of 55 dBA at the adjacent residences. Although design requirements for the PA system would reduce noise to the extent feasible, the noise impact from project-related activities on the field would be significant and unavoidable.	**N-2~~1~~ Public Address System Design.** The District shall design and operate the new PA system to not exceed an L_5 sound level of 55 dBA at the surrounding residences to the extent possible. This would require distributing highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loud speakers and the coverage area shall be minimized to reduce spillover noise to the community. In addition, the system output volume shall be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter). After installation of the PA system, the District shall retain a qualified acoustic engineer to test the system and ensure that PA noise does not exceed an L_5 sound level of 55 dBA at the surrounding	Significant and unavoidable

Impact	Mitigation Measure	Residual Impact
	residences to the extent possible. The PA system shall be adjusted as necessary to comply with the L_5 threshold to the extent possible.	
Impact N-3 Project-generated traffic would incrementally increase noise levels on area roadways. However, the change in roadway noise from traffic generated by the project would not exceed FTA noise thresholds under typical conditions. Therefore, the impact of increased traffic noise on existing uses would be less than significant.	None required	Less than significant without mitigation
Transportation and Traffic		
Impact T-1 Increases in traffic for the maximum studied event under Existing plus Project conditions would not cause operating conditions to fall below the LOS standard at any of the study intersections. Therefore, the project would not conflict with the City's transportation plans and this impact would be less than significant.	None required	Less than significant without mitigation
Impact T-2 Increases in traffic under Cumulative Plus Project conditions would not cause intersection operations to fall below the LOS standard at any of the study intersections. Therefore, the proposed project would not conflict with any of the city of Novato's transportation plans. This impact would be less than significant.	None required	Less than significant without mitigation

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1 Introduction

This document is an ~~Draft~~ Environmental Impact Report (EIR) for the proposed San Marin High School Stadium Lights Project, located in the City of Novato, California. For the purposes of this EIR, the San Marin High School Stadium Lights Project refers to the installation of stadium lighting and athletic field improvements, as detailed in Chapter 2, *Project Description*.

This section describes: (1) the general project background; (2) the purpose and legal authority of the EIR; (3) the scope and content of the EIR; (4) lead, responsible, and trustee agencies; and (5) the environmental review process required under the California Environmental Quality Act (CEQA).

1.1 Environmental Impact Report Background

A Notice of Preparation (NOP) of an environmental impact report was distributed for a 30-day agency and public review period, along with an Initial Study, on August 25, 2016. The Initial Study concluded that the proposed project may have significant environmental impacts and that the District would prepare an EIR to address these impacts. The District held an EIR Scoping Meeting on September 7, 2016, in the Student Center at San Marin High School. Over 50 members of the public attended the Scoping Meeting and the District received 57 letters in response to the NOP. The letters are included in Appendix A and their content is summarized in Table 2. Issues brought up in the scoping comment letters did not identify additional issue areas requiring EIR analysis beyond those previously identified in the Initial Study. However, additional information was added to the Initial Study to address some issues discussed. The revised Initial Study, NOP, and NOP comment letters are presented in Appendix A.

Table 2 NOP Comments and EIR Response

Topic	Comment/Request	How and Where it was Addressed
Aesthetics	Multiple commenters expressed concerns regarding the potential impacts to aesthetics, including light and glare, from the proposed project. Specifically, commenters expressed concern regarding the schedule of events, and stated that the lights could be on for longer periods of time over more days than what has been outlined. Additionally, multiple commenters expressed concern regarding the potential health impacts associated with LED lights. It was also noted that the light and glare generated by the project would impact the skyline.	Section 4.1, *Aesthetics*, of this EIR: potential impacts associated with light and glare are discussed in Impact AES-3.
Air Quality	Commenters expressed concern regarding the impact of air quality caused by vehicle trips.	Section, 4.2, *Air Quality*, of this EIR: see Section 4.2 for analysis regarding air quality emissions and Appendix C for air quality emissions calculations.
Biological Resources	Several commenters expressed concerns regarding the potential impact from the lights and noise associated with the project, stating that the project could impact nocturnal species in the surrounding open space area, specifically owls and bats. Additionally, commenters stated concern regarding the potential impact to the riparian corridor. Multiple commenters also stated	Section IV, *Biological Resources*, of the Initial Study, Appendix A: biological resources are evaluated in Section IV, *Biological Resources*, of the Initial Study.

Topic	Comment/Request	How and Where it was Addressed
	concerns regarding waste and the potential for litter. Likewise, several commenters stated concerns about the potential impacts to open space areas and the possibility that students may utilize the open space to engage in illegal activities, including consuming drugs and alcohol, and stated concerns about the hillsides under those circumstances.	
Economic	Various commenters stated concerns regarding the potential impacts of the project on property values within the area surrounding the project site. Additionally, multiple commenters stated concern about project funding.	Pursuant to CEQA Guidelines Section 15064, economic impacts, including potential impacts to property value and project funding, are not covered under CEQA.
Noise	Multiple commenters expressed concern regarding the noise associated with the proposed project. Specifically, commenters expressed concern related to the duration of noise, and the potential timeframe that noise may occur. Commenters also referenced the noise associated with the potential traffic and any potential after-parties that may occur.	Section, 4.5, *Noise*, of this EIR: Noise generated by the project, including on-site stadium noise and potential traffic noise are analyzed in Section, 4.5, *Noise.*
Public Service	Several commenters expressed concerns regarding potential impacts associated with public services. Specifically, commenters were concerned about available police protection and the security of night events on campus. Multiple commenters expressed concern regarding students engaging in illegal activities in the open space on the hillsides adjacent to the stadium, suggesting that school staff supervising the event would not have jurisdiction over misbehavior and suggesting that the police department may not have the available resources to manage.	Section XIV, *Population and Housing*, of the Initial Study, Appendix A: public services are evaluated in Section XIV, *Public Services*, of the Initial Study.
Transportation/ Traffic	Various commenters expressed concern regarding the potential impacts to traffic associated with the proposed project. Commenters suggested that the project would increase traffic beyond what the available roads may be able to maintain and are concerned about safety related to the traffic associated with the project. Additionally, commenters expressed concerns regarding parking	Section, 4.6, *Transportation and Traffic*, of this EIR: Traffic generated by the project is analyzed in Section, 465, Transportation and *Traffic.*

1.2 Purpose and Legal Authority

The proposed project requires discretionary approvals from the District's Board of Education. Therefore, it is subject to the environmental review requirements of CEQA. In accordance with CEQA Guidelines §15121, the purpose of this EIR is to serve as an informational document that:

> *...will inform public agency decision makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.*

This EIR has been prepared as a Project EIR pursuant to CEQA Guidelines §15161. A Project EIR is appropriate for a specific development project. As stated in the CEQA Guidelines:

> *This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project, including planning, construction, and operation.*

This EIR is to serve as an informational document for the public and District decision makers. The process will culminate with a Novato Unified School District Board of Trustee's hearing to consider certification of the Final EIR and approval of the project.

1.3 Scope and Content

Of the 17 areas discussed in the Initial Study prepared for the project and provided in Appendix A, the following were identified as requiring further study in an EIR:

- Aesthetics
- Air Quality
- Cultural Resources
- Greenhouse Gas Emissions
- Noise
- Transportation/Traffic

This EIR addresses the issues referenced above and identifies potentially significant environmental impacts of the project and cumulative development in the city in accordance with provisions set forth in the CEQA Guidelines. The EIR also recommends feasible mitigation measures, where needed and possible, that would reduce or eliminate adverse environmental effects. In preparing the EIR, pertinent City policies and guidelines, existing EIRs, and other background documents were used. A full reference list is contained in Section 7.0, *References and Preparers*.

The Alternatives section of the EIR was prepared in accordance with CEQA Guidelines §15126.6 and focuses on alternatives that are capable of eliminating or reducing significant adverse effects associated with the project while feasibly attaining most of the basic project objectives. In addition, the Alternatives section identifies the "environmentally superior" alternative among the alternatives assessed. The alternatives evaluated include the CEQA required "No Project" Alternative, an off-site alternative, and an on-site alternative.

1.4 Lead, Responsible, and Trustee Agencies

The CEQA Guidelines define lead, responsible, and trustee agencies. The Novato Unified School District ("the District") is the lead agency for the project because it holds principal responsibility for approving the project.

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. A trustee agency refers to a state agency having jurisdiction by law over natural resources affected by a project. The Division of the State Architect (DSA) provides design and construction oversight for K-12 schools, community colleges, and other state-owned and leased facilities. The DSA provides plan review for structural safety, fire and life safety, and ADA accessibility compliance. Because the proposed project is considered an improvement to educational facilities at a public school, the governing board of the District adopted Resolution No. 16-2016/17 to exempt the proposed project from local zoning ordinance requirements per Government Code Section 53094. There are no other responsible or trustee agencies for the proposed project.

1.5 Environmental Review Process

The environmental impact review process, as required under CEQA, is summarized below and illustrated in Figure 1. The steps are presented in sequential order.

1 **Notice of Preparation (NOP) Distributed**. Immediately after deciding that an EIR is required, the lead agency must file a NOP soliciting input on the EIR scope to "responsible," "trustee," and involved federal agencies; to the State Clearinghouse, if one or more state agencies is a responsible or trustee agency; and to parties previously requesting notice in writing. The NOP must be posted in the County Clerk's office for 30 days. A scoping meeting to solicit public input on the issues to be assessed in the EIR is not required, but may be conducted by the lead agency.

2 **Draft EIR Prepared**. The Draft EIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) alternatives; g) mitigation measures; and h) irreversible changes.

3 **Public Notice and Review**. A lead agency must prepare a Public Notice of Availability of an EIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092) and sent to anyone requesting it. Additionally, public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the Draft EIR from responsible and trustee agencies, and adjacent cities and counties. The minimum public review period for a Draft EIR is 30 days. When a Draft EIR is sent to the State Clearinghouse for review, the public review period must be 45 days, unless a shorter period is approved by the Clearinghouse (Public Resources Code 21091). Distribution of the Draft EIR may be required through the State Clearinghouse.

4 **Notice of Completion**. A lead agency must file a Notice of Completion with the State Clearinghouse as soon as it completes a Draft EIR.

5 **Final EIR**. A Final EIR must include: a) the Draft EIR; b) copies of comments received during public review; c) list of persons and entities commenting; and d) responses to comments.

6 **Certification of Final EIR**. The lead agency shall certify: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision-making body reviewed and considered the information in the Final EIR prior to approving a project.

7 **Lead Agency Project Decision**. A lead agency may: a) disapprove a project because of its significant environmental effects; b) require changes to a project to reduce or avoid significant environmental effects; or c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted.

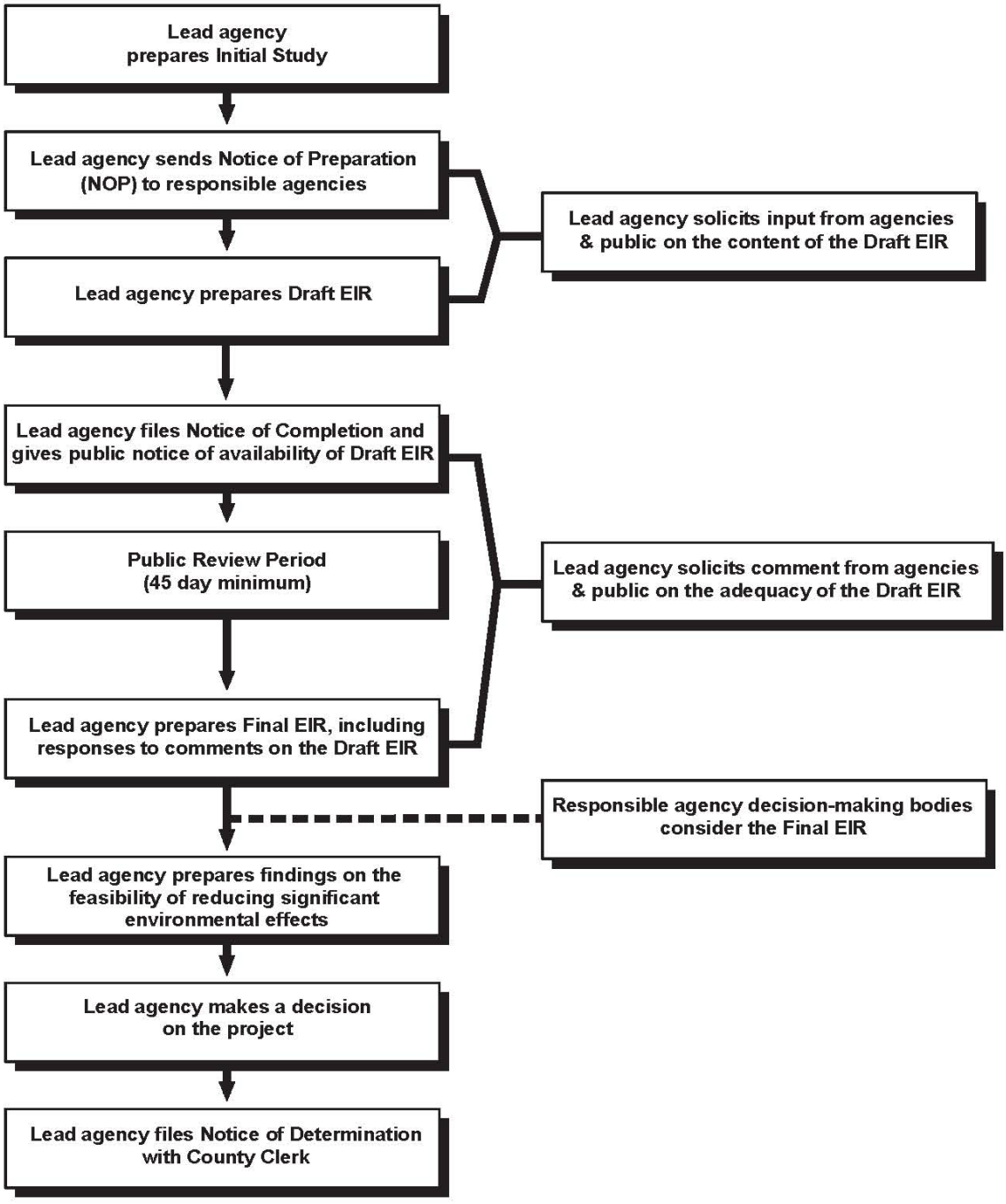
8 **Findings/Statement of Overriding Considerations**. For each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible. If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.

9 **Mitigation Monitoring/Reporting Program**. When an agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.

10 **Notice of Determination**. An agency must file a Notice of Determination after deciding to approve a project for which an EIR is prepared. A local agency must file the Notice with the County Clerk. The

Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30-day statute of limitations on CEQA challenges.

Figure 1 Environmental Review Process



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2 Project Description

This section describes the proposed project, including the project applicant, project location, major project characteristics, project objectives, and discretionary approvals needed for project approval.

2.1 Project Applicant

Novato Unified School District
1015 7th Street
Novato, California 94945
Contact: Yancy Hawkins, Assistant Superintendent of Business and Operations

2.2 Project Location

The project location is the athletic field area in the northeastern portion of the San Marin High School campus, located at 15 San Marin Drive, just north of its intersection with Novato Boulevard, in the city of Novato. Figure 2 shows the project site's regional location and Figure 3 shows the location of the proposed athletic field improvements at the school site.

2.3 Existing Site Characteristics

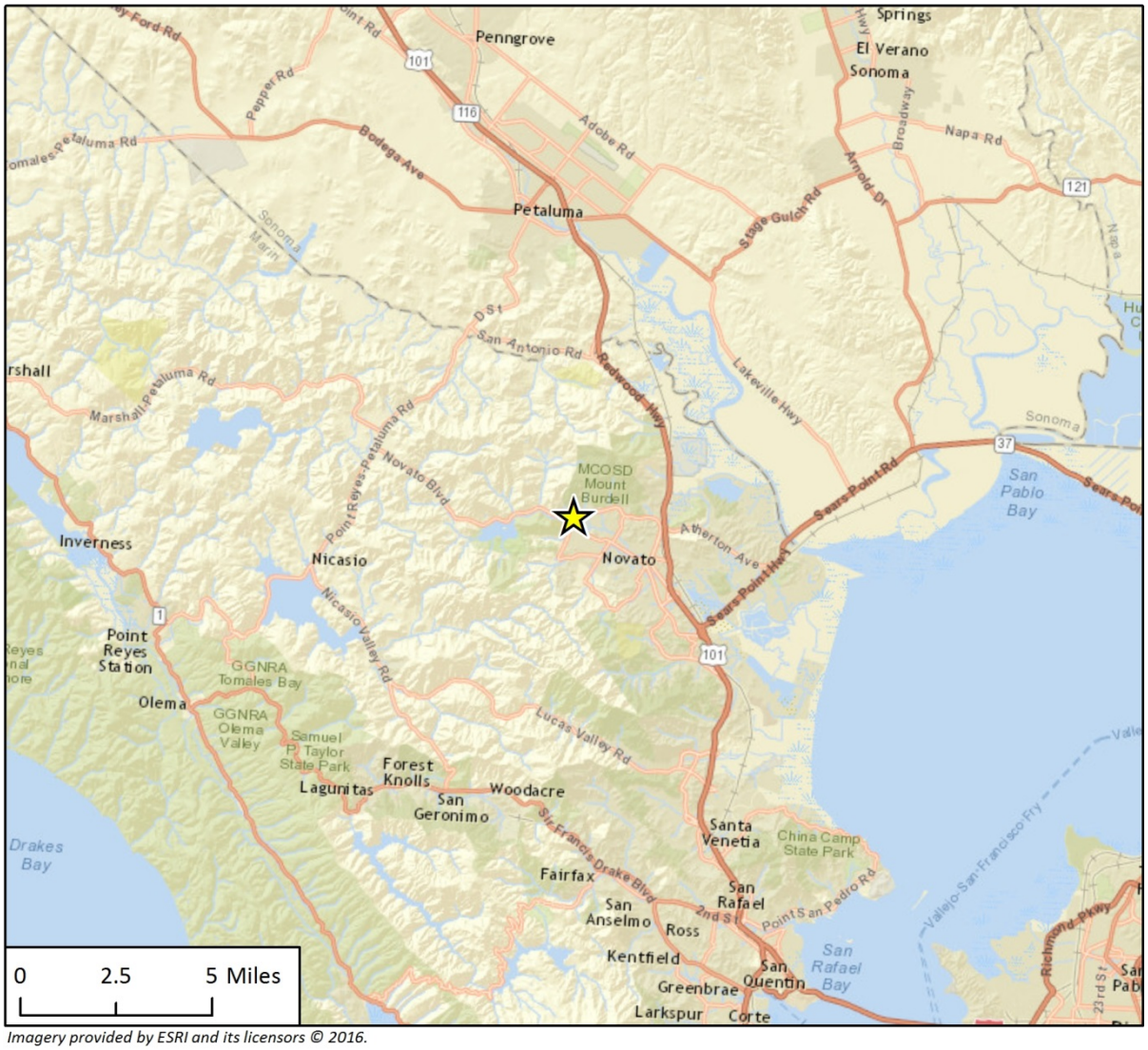
The project site is an existing stadium that is located on the San Marin High School campus. San Marin High School was established in 1968 and enrolled 1,076 students as of the 2015-16 school year (CDE DataQuest, 2016). As shown in Figure 3, the athletic field is located on the northeast portion of the school property. The athletic field has a bleacher capacity of 2,400 persons with standing room around the field for an additional approximately 1,600 persons. All construction and operation activities for the project would occur within District property.

Currently, no permanent or portable athletic field lighting is used at the San Marin High School stadium. Existing permanent lighting is present at the softball field to the west of the football stadium. Exterior security light fixtures are located at on-site school buildings and at on-site solar panels. An existing public address system is used throughout the school year (generally on Thursdays through Sundays) for high school athletic contests and community sports events, including Pop Warner football games on Sundays.

Surrounding land uses are primarily residential. San Marin Drive borders the school to the east and Novato Boulevard borders the school to the south. Single-family residences and All Saints Lutheran Church are east of San Marin Drive. The City's approximately 98-acre O'Hair Park, which includes equestrian facilities at Morning Star Farm, the Dogbone Meadow dog park, and trails through open space areas, is located across Novato Boulevard south of the school. The Dwarf Oak Trail to Mt. Burdell and single-family residences on Sandy Creek Way abut the school site to the west. Single-family residences on San Ramon Way are located north of the school, while multi-family residences on Aspen Drive are to the northeast. The nearest residences are located approximately 120 feet north and northeast of the stadium track.

Novato Creek runs through O'Hair Park approximately one-quarter mile south of the stadium.

Figure 2 Regional Location



Imagery provided by ESRI and its licensors © 2016.

Project Location

N

ISFig 1 Regional Location

Figure 3 San Marin High School Site Location

Imagery provided by Google and its licensors © 2016.

ISFig 2 Project Location

2.4 Project Characteristics

2.4.1 Project Overview

The project would involve installation of athletic field lights, including an eight-pole stadium lighting system, and an upgraded public address system at San Marin High School. The project would also expand the hours of use for the athletic field by allowing use of the field during non-daylight hours and non-school hours. The stadium lights would not be used for community or non-school activities.

The District proposes to install permanent stadium lighting that would consist of a modern, energy-efficient, LED lighting system that would minimize the glare of the stadium lights and reduce the amount of illumination outside of the stadium fields compared to older lighting systems. In addition, the proposed project would involve upgrades to the public address system. The current public address system creates unintended noise that is not properly directed within the stadium. The upgrade would allow the system to focus and contain sound within the stadium.

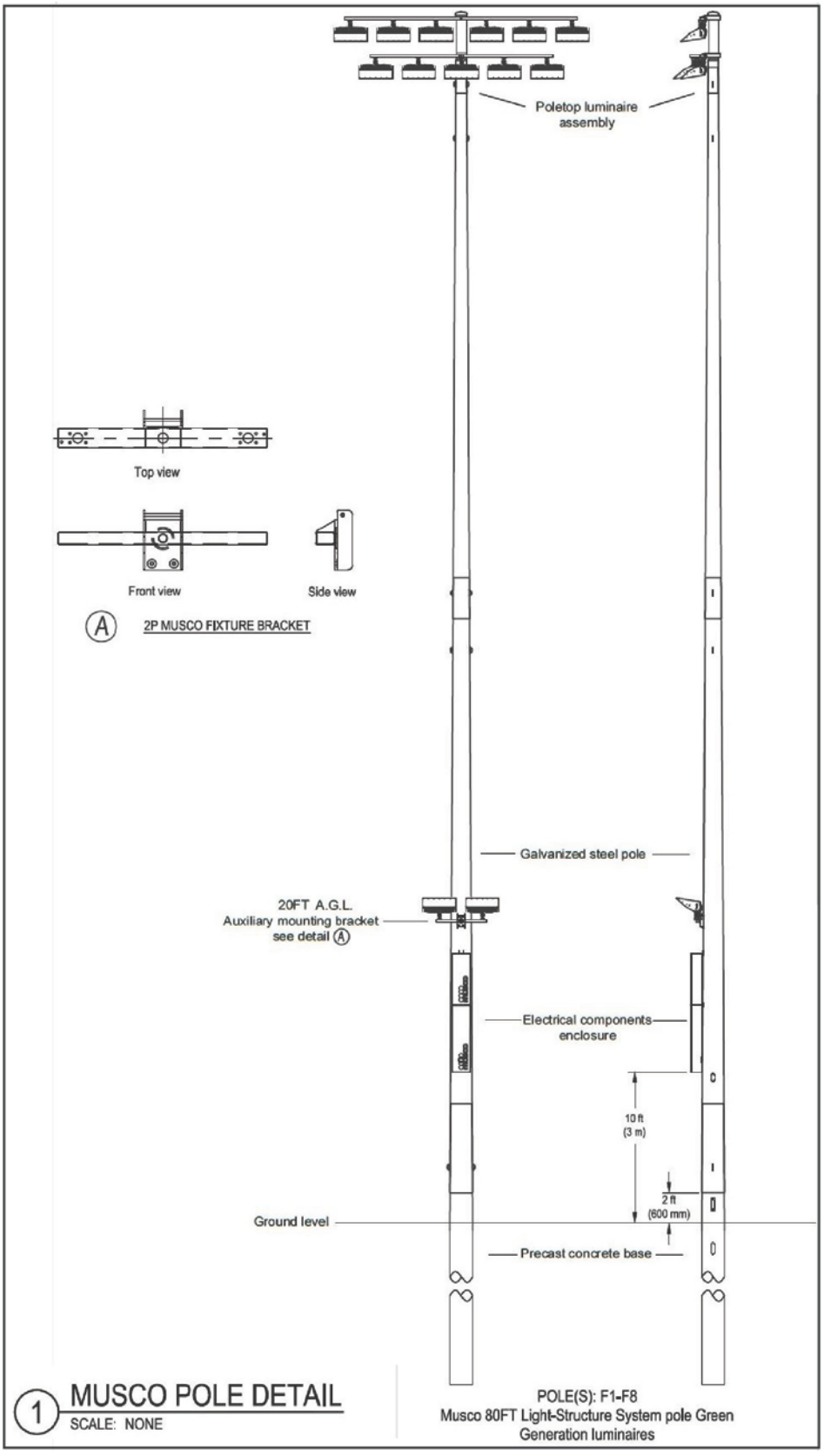
2.4.1.1 Lighting

The lighting installation at San Marin High School's stadium would generally consist of two sets of poles. The first set of poles would support lighting fixtures for illuminating the field during sports competitions, practices, and other events. These poles would be approximately 80 feet tall and would be installed at eight locations, arranged as four poles spaced evenly along each long side of the athletic field. The second set of poles would support lighting fixtures for illuminating the field during post-event egress, clean-up, and potentially during sports team practices. These poles would be up to approximately 30 feet tall and would be installed at up to 18 locations throughout the athletic field site to provide adequate lighting for safe egress.

The primary athletic field lights would consist of eight Musco 80-foot Light-Structure System poles with Green Generation LED luminaires (light fixtures) or general equivalent. The luminaires would be mounted at up to three locations on each pole. Downward-facing luminaires would be mounted at 80 feet on each pole and would serve as the primary source of illumination for the field during sports events and other activities. Additional downward-facing luminaires may be mounted at 70 feet on some poles in order to provide consistent illumination across the field surface. The design illumination for the athletic field at San Marin High School would be 40 foot-candles. Lower output, upward-facing luminaires would be mounted at 20 feet on each pole in order to illuminate airborne objects such as footballs during ~~punts and kickoffs~~ games. The upward-facing luminaires are necessary because the modern Musco lighting system (or general equivalent) provides highly focused light and minimizes glare to the extent that airborne objects such as footballs during kickoffs would not otherwise be visible to the players and spectators. The profile, elevation, and luminaire details for the Musco 80-foot Light-Structure System poles are shown on Figure 4.

A second set of lower-output LED luminaires would be installed on up to 18 new and existing poles, each up to approximately 30 feet tall. These egress and clean-up lighting system poles would be spaced evenly around the perimeter of the track and also along pathways leading to ADA-compliant accessible parking spaces. The egress lights would be supplied with a back-up power source to maintain functionality during a power outage.

Figure 4 Conceptual Lighting Pole Details



2.4.1.2 Public Address System

Basic improvements to the existing public address system would be installed at the stadium. The upgraded public address system would consist of speakers mounted on up to 18 poles, each approximately 30 feet tall. These poles would be located behind the bleachers on either side of the athletic field. A public address speaker may be mounted on a pole that also supports an egress lighting luminaire. The speakers would be directed towards the spectators and the field, and they would be designed to minimize the amount of sound that would leave the stadium. The public address system would be controlled by an automixer/digital signal processor (DSP) and a control panel located in the press box. The DSP would be set to limit the sound level to conform to the requirements of the applicable local noise ordinance.

Additional Panaray 802 III loudspeakers (or general equivalent) would be installed at the stadium's press box and snack shack. These speakers would increase the volume of the public address system throughout the bleachers and field with focused coverage so as to minimize disturbance to neighbors. Drums or other band instruments are not currently played at athletic events at the stadium. Band instruments are not expected to be played at athletic events with implementation of the proposed project and are not part of the project as proposed.

2.4.1.3 Security, Parking, Crowd and Traffic Control, and Litter Removal

Surrounding high schools with existing stadium lights and evening events were contacted in order to provide clarity regarding their level of security needs and specific campus security commitments. Additionally, campuses were asked if they have experienced security issues from the stadium lights on their campuses in the past. The Novato Police Department was also contacted to gather input regarding the potential for the project to increase the need for police protection in the area. In general, each campus representative stated that they provide on-site staff for security, and in some cases, especially during large events including homecoming, most campuses hire additional security. However, no campus reported any specific security related issues or events. See Appendix B for a full summary of the responses from surrounding campuses regarding the safety and security measures associated with their stadium lights and evening events. Novato Police Department's response is also included in Appendix B as well as in the Revised Initial Study, Appendix A.

The District would assign staff to handle security, crowd concerns, and litter removal at home athletic events. In addition, the District would consider hiring, on an as-needed basis, security and outside cleaning companies for large events such as playoff games, rival games, and graduation ceremonies. A detailed safety plan is being developed by the District and will generally contain elements that address security, crowd control, traffic issues, and litter removal.

During San Marin athletic games and other District-sponsored events such as graduation ceremonies and middle-school track meets, parking demand may exceed on-site parking availability. Some off-site street parking on surrounding streets would be utilized during large events. With the exception of these large events, all other uses of the stadium are not expected to result in demand for off-site parking. The project would not involve changes to the existing parking lot and driveway configuration at San Marin High School.

Trash receptacles would be provided inside and outside of the stadium. The school would remove game- or event-related trash from school property and properly dispose of all event-related trash immediately or no later than the following morning. In addition, the school would be responsible for checking the adjacent properties for litter and all event-related litter would be removed immediately following each event or as soon as practically feasible.

2.4.1.4 Utilities

Electricity for the proposed stadium lights would be provided by Marin Clean Energy through existing service connections. New electrical conduits would be installed on-site through either open trench or jack and bore construction to provide power to the lighting system. The conduits would be run underground to form a circuit between the new lighting system poles. Pullboxes would be installed at each lighting pole, at certain control panel locations, and at other locations around the stadium as necessary for the construction and operation of the new electrical system. No new off-site electrical infrastructure would be required, and the existing service connections would provide a sufficient amount of electricity to power the lighting and public address systems.

No restrooms, drinking fountains, sprinklers, or other sources of wastewater would be constructed as part of the project. Existing drinking fountains and water faucets within and near the stadium would remain unchanged. The solid waste generated by construction of the project would be limited to a very small amount of packaging waste from the lighting and public address equipment and concrete and soil that would be removed during pole installation and electrical conduit trenching. No new concession services are proposed as part of this project, and waste generated during evening athletic games, such as food and beverage containers, would likely represent a redistribution of the existing waste stream rather than the introduction of a new source of waste.

2.4.1.5 Construction Schedule and Details

If approved by the District Board of Education, project construction is estimated to last approximately three months and would begin no earlier than the fall of 2017. Construction activities would occur between September 1 and January 31, during the non-nesting season. Construction activities would include materials delivery, site preparation and minimal grading, excavation for pole foundation installation, trenching and boring for electrical conduit installation, installation via hydraulic crane of the lighting and PA speaker poles, mounting of the luminaires and speakers, and restoration of disturbed surfaces including pavement and vegetation that was removed during excavation and trenching.

Construction activities would be subject to approval of the Division of the State Architect (DSA). Because the proposed project is considered an improvement to educational facilities at a public school, the governing board of the District adopted Resolution No. 16-2016/17 to exempt the proposed project from local zoning ordinance requirements per Government Code Section 53094. Some ordinances are not exempt under 53094, and per Government Code Section 53097 the District must comply with a city or county ordinance (1) regulating drainage improvements and conditions, (2) regulating road improvements and conditions, or (3) requiring the review and approval of grading plans. The proposed project would not affect any stream, drainage, or other water of the state. The proposed project would not alter any roadways nor would it substantially change any roadway conditions. No grade changes would occur on the project site, total fill will be less than 100 cubic yards, and net fill will be zero. No building permits would be issued by the City as construction would be approved by DSA. The approval of footings for new light poles is a structural issue that does not fall within the limited grading, drainage, and street improvement jurisdiction of the City under Government Code 53097.

Ground disturbance would be limited to excavation for the lighting and speaker system pole foundations and trenching or boring for the electrical conduit installation. The conduit trenches would be approximately three feet deep and one foot wide at the base, and would have side slopes not steeper than 1.5 feet horizontal to 1.0 feet vertical. Foundation excavations for the 80-foot lighting poles would be 10 feet deep or less. Excavated soil would be reused to the maximum extent possible. Small amounts of clean fill, sand, and pea-gravel would be imported as necessary. The quantity of exported soil would be 50 cubic yards or less. Existing pavement above new conduit installation locations would be removed and replaced after completion of trenching, or would be avoided using bore and jacking conduit

installation. The project would not include any new landscaping. Landscaped areas (such as grassy lawns or other vegetated areas) that would be disturbed during trenching for electrical conduits would be restored to pre-construction conditions. The driplines of existing trees would be avoided to the maximum extent possible, and no tree removal is proposed. The construction equipment and the number days that each piece of equipment would be used are estimated as follows:

- Semi-truck and lowboy for materials delivery (4 each, scheduled as needed)
- Excavator mounted drill rig for 80' pole foundation excavation (2 days)
- Small excavator or backhoe for site preparation and trenching (20 days)
- Skid steer drill rig for 30' pole foundation excavation (5 days)
- Hydraulic horizontal boring machine for conduit tunnel boring (20 days)
- Hydraulic crane for pole installation and luminaire mounting (2 days)
- Concrete pump for foundations (2 days)
- Concrete trucks for foundations (2 days)

During the approximately three month construction period, equipment would be staged and stored in a secure, paved area on District property or would be stored off-site at the contractor's facilities at their discretion between periods of use.

2.4.1.6 Proposed Schedule of Events

The new stadium lighting system would allow for the expansion of evening and nighttime activities at the stadium site. These activities would generally end no later than 9:30 PM on Fridays and no later than 8:15 PM from Monday through Thursday, and the main competition-level lights would be turned off approximately 15 minutes after the end of a scheduled activity. The proposed schedule of events per school year ~~and the associated start and end times for both lighting and public address system use are~~ is shown in Table 3 ~~below~~. The proposed frequency of use for the lights and the PA system is shown in Table 4. While the timing of some events would shift to evening and nighttime hours, the frequency of events per school year would not significantly change from existing usage. The stadium lights would not be used for community or non-school activities.

Table 3 Proposed Schedule of Events

Event Type	Day of the Week	Frequency (on average)	Time of Year	PA Use?	Main Lights Off Time
PE Classes	Monday-Friday	180 days (school year)	August-June	No	No use
HS Football Games	Thursday & Friday	~~16~~ 22 (plus any playoff games)	August-November ~~(Lights: Oct – Nov)~~	Yes	8:30 PM (Thursday frosh games) 9:45 PM (Fridays)
HS Football Practices	Monday-~~Friday~~ Thursday	Daily	~~August~~October-November ~~(Lights: Oct – Nov)~~	No	8:00 PM
HS Soccer Games	Tuesday-Saturday	~~14~~24 (plus any playoff games)	November-February	2x	8:30 ~~8:00~~ PM
HS Soccer Practices	Monday-~~Saturday~~ Friday	Daily	November-February	No	8:00 PM
HS Track Meets	Wednesday-Thursday	2 (plus any finals)	~~February-May~~ March - April	Yes	8:30~~8:00~~ PM
HS Track Practices	Monday-Friday	Daily	February-May (Lights: Feb – March)	No	8:00 PM
HS Lacrosse Games	Monday-Saturday	~~16~~13 (plus any playoff games)	February-May (Lights: Feb – March)	2x	8:30 ~~8:00~~ PM
HS Lacrosse Practices	Monday-Saturday	Daily	February-May (Lights: Feb – March)	No	8:00 PM
Powder Puff Game	Friday	1 time	October	Yes	8:00 ~~9:45~~ PM
~~MS Track Meet~~	~~Friday~~	~~1 time~~	~~May~~	~~Yes~~	~~No use~~
Novato Youth Football~~Pop Warner~~ Games	Saturday	6	August-October ~~November~~	Yes	No Use
~~Pop Warner Rally~~	~~Friday~~	~~1 time~~	~~August~~	~~Yes~~	~~No use~~
~~Youth Soccer Parade~~	~~Saturday~~	~~1 time~~	~~September~~	~~Yes~~	~~No use~~

Table 4 Proposed Frequency of Use

Month	Days with Light Usage*	Days with PA Usage	Notes
August	2	4	
September	5	8	
October	21	7	1 PA day is for Powder Puff Football Game
November	22	5	
December	22	0	
January	22	0	
February	24	6	2 of the PA days are for seniors day (about 10 minutes)
March	15	1	

Month	Days with Light Usage*	Days with PA Usage	Notes
April	7	3	2 of the PA days are for seniors day (about 10 minutes)
May	11	6	
June	1	1	Graduation
Total	**152**	**41**	**24 of the days with light usage and 14 of the days with PA usage are possible MCAL or NCS playoff games. During the 2015-16 school year SMHS hosted 4 playoff games; SMHS may host up to 3 playoff games in 2016-17 school year.**

*Worst case scenario when not on Daylight Savings Time, includes possible Novato High games. Rental of field with lights usage to outside organizations is not being considered or anticipated.

Athletic practices would constitute the majority of evening stadium use at the project site, specifically between the months of October and March. These practices could occur on any day from Monday through ~~Saturday~~ Friday and could utilize the stadium lights until 8:00 PM. Currently, practices end by 5:30 PM from Monday to Friday and by 3:00 PM on Saturday. The public address system would not be used during practices. No spectators are expected to attend practices, and noise would be limited to students' and coaches' voices and potentially an occasional coach's whistle. The same as with school practices, the public address system would not be used during community athletic activities (with the exception of six Novato Youth Football game days on Saturdays in August, September, and October lasting until 6:00 PM) and noise would be limited to participants' voices and potentially an occasional referee's whistle. Additionally, the lights would not be in use during community athletic activities, including Novato Youth Football ~~Pop Warner G~~games.

High school football games would occur up to ~~16~~ 22 times per year, plus any playoff games, on Thursday and Friday evenings and would typically end by 9:30 PM on Fridays and by 8:15 PM on Thursdays. The main stadium lights would be turned off 15 minutes after the end of a game, by approximately 9:45 PM on Fridays and by approximately 8:30 PM on Thursdays. Currently, home football games take place on Saturday and end by 4:00 PM. The football games would make full use of the proposed public address system and would involve running commentary. Spectator attendance at the football games would be substantially greater than for other high-school athletic games. Based on current attendance shown in Table 5~~Table 4~~, it is anticipated that the crowd size would reach approximately 40% of the stadium's 2,400-seat bleacher capacity (1,000 persons) at regular-season football games and 60% of bleacher capacity (1,440 persons) at playoff games.

Table 5~~4~~ Attendance at Current Sporting Events

Event	Regular-Season Game Attendance	Novato/MC/Playoff Game Attendance
Football	400	1,400
Soccer	50	100
Lacrosse	50	100
HS Track Meet	200	500
Powder Puff	300	–
MS Track Meet	1,200	–
Pop Warner Games	800	–
Youth Soccer	1,000	–

High school soccer games could occur Tuesday through Saturday until ~~8:00~~ 8:30 PM, and high school lacrosse games could occur Monday through Saturday until ~~8:00~~ 8:30 PM. These soccer and lacrosse games would take place an average of ~~30~~ 37 times per year combined, plus any playoff games. The public address system would not be used during these games, except for senior night and any playoff games. Based on current attendance, crowds of about 50 people are expected at regular-season soccer and lacrosse games.

Evening school activities (such as graduation, rallies, or other special events) could occur up to four times per year and would involve the use of the stadium lights and public address system. The crowds for one or more of these special events may be comparable in size to those during an evening football game.

2.5 Background and Project Objectives

There are three main reasons for the installation of stadium lights at San Marin High School. The first is to provide students with extended practice/game times to reduce time out of class, the second is to increase athlete safety, and the third is to provide the opportunity for students, parents and community members to participate in evening football games on Friday nights and other evening school events. During winter months (November through March) the sun sets on average at 5:00 PM, impacting the ability of the winter sports teams to get their practice times and games in before dark. Since practices and games are scheduled early during daylight, the soccer, lacrosse, and track/field athletes are leaving afternoon classes early and missing instructional time to attend practice and games. Approximately 1,500 hours of instructional time are being missed due to early releases as game times begin at 3:00 PM. Stadium lights would enable San Marin High School to extend practice times and game times until 8:00 and 8:30 PM respectively, thus decreasing the need for students to leave school early and miss instructional time. In addition, there is only one artificial turf field at San Marin High School. During wet conditions, access to two other fields, which are both grass, can be limited such that practice time is limited or field sharing must occur. Further, the District has identified a need to build community by hosting football games on Friday nights. Football is the largest attended sport at the school and the District believes attendance would be improved by hosting games on Friday night instead of Saturday afternoon. Attendance at other school community building-events hosted at the stadium could also benefit by occurring during evening hours.

Therefore, the objectives of the proposed project are to:

1 Provide extended availability of the athletic fields to improve academic performance by minimizing early class dismissal and missed instructional time for student athletes.

2 Allow for the scheduling of games at times when students, parents, and community members can more easily attend the events, which would increase school spirit and increase revenue from ticket purchases.
3 Provide nighttime opportunities for students to gather to cheer on their team offering an alternative to going to parties or other unhealthy recreational activities, in an alcohol-free environment.
4 Improve athlete safety by providing superior lighting conditions during evening practices and sports events.
5 Improve safety by minimizing incompatible uses from sharing the field (e.g.: lacrosse teams and track/field teams practicing at the same time means that lacrosse balls may hit runners on the track).
6 Improve the public address system to focus and contain sound within the stadium.

2.6 Required Approvals

The project would require the approval of the District's Board of Education. The Division of the State Architect (DSA) provides design and construction oversight for K-12 schools, community colleges, and other state-owned and leased facilities. The DSA provides plan review for structural safety, fire and life safety, and ADA accessibility compliance. Approval would not be required by any other public agencies.

3 Environmental Setting

This section provides a general overview of the environmental setting for the project. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4.0, Environmental Impact Analysis.

3.1 Regional Setting

The City of Novato is located in the Marin County subregion of the San Francisco Bay Basin. The basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County. Due to the proximity of the San Francisco Bay and Pacific Ocean, the climate in the basin is characterized by warm dry summers and cool moist winters. In summers, temperatures in the City generally range from the 50s to high 70s and low 80s. In winter, temperatures range from the 30s to the 50s. During winter months, the Pacific High becomes weaker and shifts south, allowing weather systems associated with the polar jet stream to affect the region. Low pressure systems produce periods of cloudiness, strong shifting winds and precipitation. Novato, which lies mostly on the lee side of the coastal mountains in Marin County, receives about 30 inches of precipitation per year. Mountains to the west receive 40 to 50 inches. Most rainfall occurs from November through April.

3.2 Project Site Setting

Figure 2 in Chapter 2, Project Description, shows the project site's regional location and Figure 3 shows the location of the proposed athletic field improvements at the school site. As shown on Figure 3, the athletic field is located on the northeast portion of the school property. The track and football field at the stadium are elevated approximately ten 10 to 15 feet above the surrounding parking lots. A retaining wall separates the bleachers at the southeastern side of the stadium from the adjacent parking lot. The northeastern end of the stadium is sunken below the level of multi-family residences to the north by an approximately 25-foot-high grassy berm. A chain-link fence rings the perimeter of the track.

The athletic field has a bleacher capacity of 2,400 persons with standing room around the field for an additional 1,600 persons. Currently, no permanent or portable athletic field lighting is used at the San Marin High School stadium. Existing permanent lighting is present at the softball field to the west of the football stadium. An existing public address system is used throughout the school year (generally on Thursdays through Sundays) for high school athletic contests and community sports events, including Pop Warner football games on Sundays.

San Marin High School is located in a suburban residential neighborhood and the surrounding land uses are primarily residential. San Marin Drive borders the school to the east and Novato Boulevard borders the school to the south. Single-family residences and All Saints Lutheran Church are east of San Marin Drive. The City's approximately 98-acre O'Hair Park, which includes equestrian facilities at Morning Star Farm, the Dogbone Meadow dog park, and trails through open space areas, is located across Novato Boulevard south of the school. The Dwarf Oak Trail to Mt. Burdell and single-family residences on Sandy Creek Way abut the school site to the west. Single-family residences on San Ramon Way are located north of the school, while multi-family residences on Aspen Drive are to the northeast. The nearest residences are located approximately 150 feet north and northeast of the stadium track. Novato Creek runs through O'Hair Park approximately one-quarter mile south of the stadium.

Additional setting information is provided in Chapter 4, Environmental Impact Analysis.

3.3 Cumulative Development

In addition to the specific impacts of individual projects, CEQA requires EIRs to consider potential cumulative impacts. CEQA defines "cumulative impacts" as two or more individual impacts that, when considered together, are considerable or will compound other environmental impacts. Cumulative impacts are the combined changes in the environment that result from the incremental impact of development of the proposed project and other nearby projects. For example, traffic impacts of two nearby projects may be insignificant when analyzed separately, but could have a significant impact when analyzed together. Cumulative impact analysis allows the EIR to provide a reasonable forecast of future environmental conditions and can more accurately gauge the effects of a series of projects.

CEQA requires cumulative impact analysis in EIRs to consider either a list of planned and pending projects that may contribute to cumulative effects or a forecast of future development potential. Currently planned and pending projects within the study area are listed in Table 6 ~~Table 5~~. These projects are considered in the cumulative analyses in Section 4.0, Environmental Impact Analysis. ~~Table 6~~ Table 7 summarizes cumulative development in the study area by land use. This analysis considers the relevance of each potential cumulative project in light of the geographic scope of the specific resource area for which impacts may occur. For instance, cumulative aesthetic impacts are limited to potential projects within the immediate viewshed or line-of-sight of the stadium or potential projects that would affect the visual character of the immediately surrounding neighborhood, whereas cumulative traffic impacts consider other potential projects within a more broad geographic scope. This analysis derived the following list of cumulative projects from a database of current planning projects provided by the City of Novato. There are no planned or pending projects within one mile of San Marin High School. The closest project is the mixed-use project at The Square Shopping Center (2001 Novato Boulevard) approximately 1.2 miles east of the project site.

Table 6~~5~~ Cumulative Projects List

Project Name/Applicant	Project Location	Description
Novato Blvd. Improvement Project	Portions of Novato Blvd. between Diablo Ave. and Grant Ave.	City capital project to widen road, including bicycle lanes.
The Square Shopping Center	2001 Novato Boulevard	Mixed use project including renovation of 74,118 sq. ft. of commercial space, demolition of 28,246 sq. ft. of existing commercial space, and addition of 53 apartment units (11 affordable), and 218 on-site and 46 off-site parking spaces. New structures include a mixed-use building at the rear of the site that is 3 stories, up to 42' high, and new 2-story apartments fronting Novato Blvd.
Oakmont Senior Living	1461 S. Novato Boulevard	Development of a 78 room senior assisted living facility, featuring 50 assisted living units and 28 memory care rooms. The facility is proposed at 72,000 square feet and 2-stories in height.
Hamilton Square	970 C Street	31 townhomes in eight, 3-story buildings, and one, two-story building, 6 of which are affordable.

Project Name/Applicant	Project Location	Description
Atherton Place	7533 and 7537 Redwood	1,340 of retail space fronting Redwood Boulevard and 50 residential townhome units. Townhomes would be 2-stories over garage.
Laurel Ridge Senior Apartments	7711 Redwood Boulevard	100 senior apartments in a single 3-story buildings with a basement parking garage, including 20 affordable units.
Wood Hollow Hotel	7701 Redwood Boulevard	Four-story hotel building of 56,430 square-feet, with 87 to 95 rooms. Parking includes a combination of surface stalls (64 cars) and a basement garage (23 cars).
Bahia Heights	End of Misty Court	Single-family residential subdivision proposing 9 residences.
Hamilton Cottages	Hamilton Parkway West of Marblehead Lane	16 single-family, 2-story residences for senior occupancy, including 2 affordable for-sale homes at the moderate income level.
Landing Court	No address	34 new multi-family units in 2- and 3-story buildings, of which 7 are affordable units.
North Bay Children's Center	933 C Street	Renovate the existing day care center with a new 19,824 sq. ft. building and site amenities.
Former Bridgepoint Academy	1787 Grant Avenue	35 new multi-family units in 2 and 3- story buildings, including 7 affordable units.
Stone Tree Golf Course		Driving range on Marin County Flood Control District Property
McPhail's Office Amendments		Amend General Plan land use designation from BPO to LIO. Master Plan and Precise Development Plan amendments to allow wider range of office and light industrial uses.
Hyppolite Accessory Structure	1468 S. Novato Blvd.	Review of as-built accessory structure in rear yard.
Mohajer Land Division & Variance	1037 Simmons Lane	Proposed 3 lot land division. Request for variance to allow non-conforming lot area and depth.
Schafer Stream Management Plan	896 Sutro Avenue	Request for use permit to allow the retention of Redwood trees in Stream Protection Zone.
Galvan Use Permit	15 Hamilton Drive	Request for a use permit to allow outdoor storage of materials for art projects.
Chase Bank Pacheco Plaza	404 Ignacio Boulevard	Request to demolish existing bank building (vacant) and construct new bank of same size.
Muha Accessory Structure	823 Hayden Avenue	Request for design review approval to construct a 484 sq. ft. detached garage on a hillside parcel.

Project Name/Applicant	Project Location	Description
Snyder Art Studio	6 Conchita	Construction of a 399 sq. ft. art studio on a hillside parcel.
McGuire Residence Addition	40 Baywood Circle	583 sq. ft. first floor addition, 210 sq. ft. garage addition, and new pool and retaining walls on a hillside parcel.
DM Elite Properties	1108 Second Street	Conversion of an existing residence to an accessory dwelling unit and construction of a new primary single family residence.
Ghany Live/Work Unit	Bolling at Marin Valley	Request for entitlements to construct a live/work unit of approximately 1,700 sq. ft.
Johnson Residence Addition	753 Bradley Avenue	Second story addition of 685 sq. ft.
Hamilton Hospital Assisted Living Facility	516 Hospital Drive	Senior assisted living facility and memory care center at the former Hamilton Hospital.

Source: City of Novato Current Planning Projects, Projects Under Review and In Process, November 2016

Table 7~~6~~ Cumulative Projects Summary

Land Use	Development
Residential Units	328 units
Non-Residential Space	151,249 square feet

Source: See Table 6 ~~Table 5~~

4 Environmental Impact Analysis

This section discusses the possible environmental effects of the proposed project for the issue areas that were identified through the Initial Study and NOP process as having the potential to experience significant impacts. “Significant effect” is defined by the CEQA Guidelines §15382 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 historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant.”

The assessment of environmental effects contained in each issue area begins with a discussion of the setting. Following the setting is a discussion of the project’s impacts. Within the impact analysis, the first subsection identifies the methodologies used and the “significance thresholds,” which are those criteria used for this analysis to determine whether potential impacts are significant. The next subsection describes the impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. The significance of the project’s environmental impacts was identified based on the following classifications:

> *Class I, Significant and Unavoidable: An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved.*
>
> *Class II, Less than Significant with Mitigation Incorporated: An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings to be made.*
>
> *Class III, Not Significant: An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.*
>
> *Class IV, Beneficial: An impact that would reduce existing environmental problems or hazards.*

The impact analysis concludes with a discussion of cumulative effects, which evaluates the impacts associated with the proposed project in conjunction with other future development in the area.

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4.1 Aesthetics

This section discusses the project's potential impacts related aesthetics including, visual character and light and glare.

4.1.1 Setting

Existing Visual Character of the Region

The City of Novato is a suburban community in northern Marin County in the San Francisco Bay Area (Novato 1996). Single-family residential neighborhoods with one- and two-story homes predominate, in addition to some multi-family housing that is dispersed mainly along arterial and collector streets (Novato 1996, 2014). Commercial uses are concentrated downtown along Grant Avenue, along Redwood Boulevard, in pockets along Highway 101, and in various small clusters and convenience centers (Novato 1996). Much of the urbanized area of Novato occupies a flat northwest-trending valley that follows Novato Creek, Vineyard Creek, Warner Creek and other tributaries flowing southeast from the hills to the Bay (Novato 2009). The topography of Novato varies from eastern flatlands at the margins of San Pablo Bay to hillsides and valleys to the west.

Scenic natural resources including hillsides, Bay plains, and Bay shorelines frame the City of Novato (Novato 2014). The City finds that views from Novato to the surrounding scenic resources are extremely important to Novato residents. These views provide physical orientation and are integral to the city's character and sense of place. Mt. Burdell, located north of the city, is a natural landmark that dominates views of Novato from U.S. 101 and most areas north and west of State Route (SR) 37. The 1,508-foot-high Mt. Burdell is part of an open space managed by the Marin County Department of Parks and Open Space which offers expansive views of Novato from a number of hiking and biking trails. Hillsides provide a scenic backdrop for developed areas. Designated open space is the largest single land use within Novato's sphere of influence (with 8,383 acres, or 37 percent of total land), followed by residential land uses (8,355 acres, or 37 percent of total land).

While there are no State-designated scenic highways in Marin County, U.S. Highway 101 (U.S. 101) is eligible for State designation as a scenic highway to the north of SR 37 in Novato (Caltrans 2016). This segment of U.S. 101, located approximately 2.3 miles east of the project site, provides scenic views of hillsides and ridgelines to the south, west, and north, and of wetlands and plains connected to San Pablo Bay to the east. The Bay plains are a key component of scenic views from U.S. 101 (Novato 1996).

Existing Visual Character of the Project Site

San Marin High School is located in a suburban residential neighborhood in northwestern Novato, with single-family residences largely one story in height to the east of San Marin Drive, two-story multi-family residences to the north and northeast, and two-story single-family residences to the west. The nearest residences are located approximately 120 feet north and northeast of the stadium track. All Saints Lutheran Church is situated to the southeast of the high school, across San Marin Drive (a four-lane road with a tree-lined median). The high school is located at the interface between suburban development and open space. The City's approximately 98-acre O'Hair Park, which includes equestrian facilities at Morning Star Farm, the Dogbone Meadow dog park, and trails through open space areas, is located across Novato Boulevard south of the school. The Dwarf Oak Trail to Mt. Burdell and single-family residences on Sandy Creek Way abut the school site to the west. Open hillsides with grassland and scattered oak trees rise to the north and west of San Marin High School.

The San Marin High School stadium (Mead Field) is at the northeast portion of the campus, with one- and two-story light brown rectangular school buildings and a small surface parking lot to the southwest, a baseball field (Lefty Gomez Field) to the northwest, and a surface parking lot to the southeast. The track and football field at the stadium are elevated approximately 10 to 15 feet above the surrounding parking lots. A retaining wall separates the bleachers at the southeastern side of the stadium from the adjacent parking lot. The northeastern end of the stadium is sunken below the level of multi-family residences to the north by an approximately 25-foot-high grassy berm. A chain-link fence rings the perimeter of the track. The most prominent visual features at the stadium are the relatively flat green athletic field surrounded by a reddish brown oval track, a mounted scoreboard and flag pole at the southwest end of the field, yellow goal posts at each end, and gray bleachers on both long sides of the field. Mounted Bose speakers in the existing public address system also overlook the bleachers. Figure 5 shows the existing visual conditions at and surrounding the stadium.

Scenic resources visible from the project site and public viewing locations in its surroundings, as defined in the City's General Plan (adopted 1996), include ridgelines and hillsides that provide a backdrop for developed areas (Novato 1996). Mt. Burdell, a scenic landmark with an elevation of 1,508 feet, is visible to the northeast of San Marin High School. Figure 6 shows existing views of the stadium from the surrounding area. As shown in Photo 3, the Dwarf Oak Trail provides public views looking south toward the stadium. Some nearby residences have views of the stadium. As shown in Photo 4, the stadium's elevated position relative to San Marin Drive and deciduous and evergreen trees in the roadway's median largely obstruct views of the project site from residences to the southeast. School buildings fully obstruct views of the stadium from O'Hair Park to the south. Trees lining the Dwarf Oak Trail block views from residences to the west. A few single-family residences on San Ramon Way to the north have direct southward views looking down on the stadium.

Existing Light and Glare Conditions

Currently, no permanent or portable athletic field lighting is used at the San Marin High School stadium, although the mounted digital scoreboard produces low-intensity light during athletic events. Offsite sources also contribute to existing light conditions (or "illumination") at the stadium. Existing permanent light fixtures are present at the softball field on the southwest portion of the high school, approximately 750 feet southwest of the stadium. Exterior security light fixtures are located at on-site school buildings and at on-site solar panels. In addition, the stadium receives spillover light to varying degrees from nearby streetlamps and the headlights of cars on San Marin Drive.

Glare refers to the discomfort or impairment of vision experienced when a person is exposed to a direct or reflected view of a light source, causing objectionable brightness that is greater than that to which the eyes are adapted (Pennsylvania Outdoor Lighting Council n.d.). By contrast, illumination is defined as the amount of light that strikes an object, including light cast by sources that are not directly seen by viewers. The intensity of glare ranges from the worst case of "disability glare," where visibility is lost, to "discomfort glare," where the light is distracting and uncomfortable. Discomfort glare is a subjective phenomenon and has not been directly linked to a physiological cause (Shuster 2014). The amount of glare depends on a set of factors such as the size of the source, the contrast between background light and the glare source, and the age of the viewer (Hiscocks 2011). General sources of glare at the stadium include headlights on and reflected sunlight from automobiles on adjacent streets and parking lots, and reflected sunlight from the windows of nearby buildings.

Figure 5 Photographs of Stadium Site

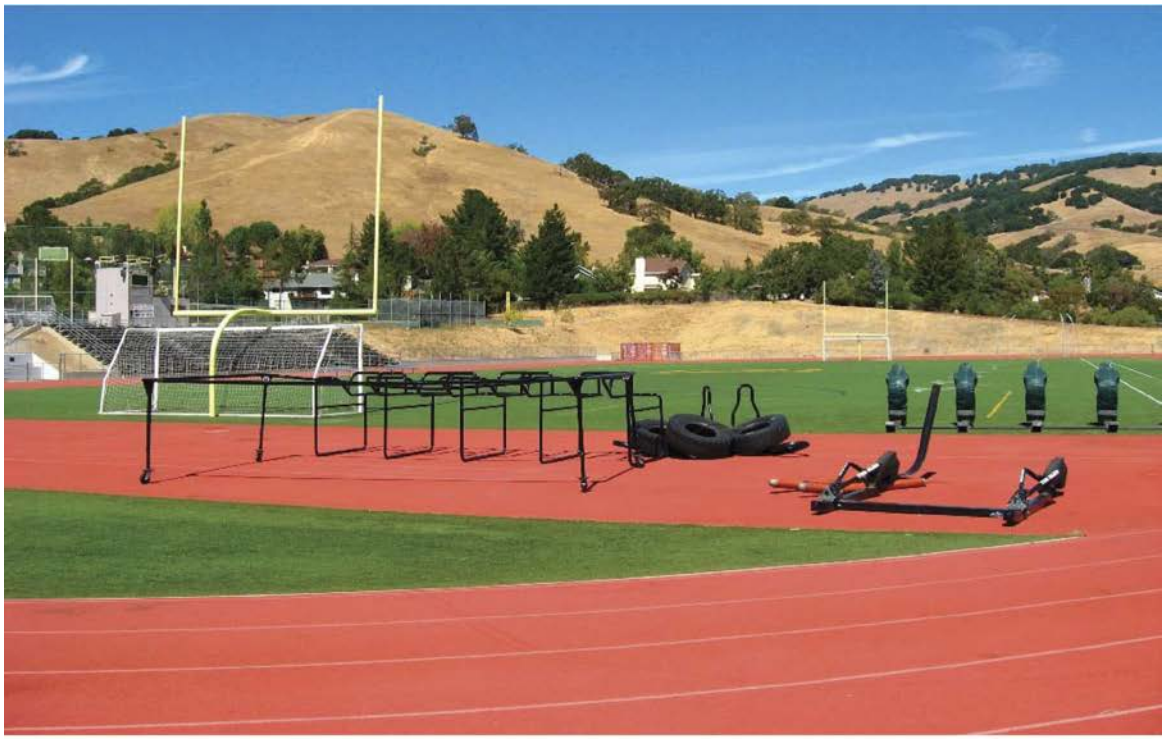

Photo 1: Northward view across stadium toward single-family residences on San Ramon Way and hillside open space.

Photo 2: View to northeast from stadium of school parking lot, San Marin Drive, and hillside open space.

Figure 6 Photographs from Surrounding Area

Photo 3: Southward view of stadium from publicly accessible open space on Dwarf Oak Trail.

Photo 4: View of stadium to northwest from single-family residences on San Marin Drive.

Regulatory Setting

State

Government Code Section 53094. This article of California's Government Code states that a school district is not required to comply with the zoning ordinances of a county or city unless the zoning ordinance makes provision for the location of public schools and unless the city or county has adopted a general plan. Furthermore, this article authorizes the governing board of a school district to render a local zoning ordinance inapplicable to a proposed use of property by the school district, by a vote of two-thirds of its members. The governing board may not takes this action when the proposed use of the property is for non-classroom facilities, including, but not limited to, warehouses, administrative buildings, and automotive storage and repair buildings. Because the proposed project is considered an improvement to educational facilities at a public school, the governing board of the District adopted Resolution No. 16-2016/17 to exempt the proposed project from local zoning ordinance requirements pertaining to aesthetics and other issues.

Local

Although the District is not required to comply with local zoning ordinances pursuant to Government Code Section 53094, the following regulatory information for the City of Novato is provided for reference.

City of Novato General Plan. The City of Novato's General Plan (1996) does not include objectives or policies applicable to visual character or scenic resources at the school site. While EN Policy 27 (Scenic Resources) in the Environment Chapter of the General Plan seeks to "protect visual values on hillsides, ridgelines, and other scenic resources," this policy addresses development on hillsides and ridgelines rather than scenic views available to or from such resources. The Community Identity Chapter states that "lighting should serve functional, safety, and aesthetic purposes." CI Policy 13 (Lighting Design Guidelines) calls for amending the City's Zoning Ordinance to incorporate design guidelines for exterior lighting that would mitigate impacts on open space or other valuable views. However, this policy has not been implemented (Novato 2015).

Novato Municipal Code. The City of Novato's Municipal Code has qualitative standards for light trespass and glare that would apply to the project, except that the District has exempted itself from the local zoning ordinance pursuant to Government Code Section 53094. Pursuant to the general development standards in Section 19.22.060 (Light and Glare), light or glare from exterior lighting must be shielded or modified to prevent emission of light or glare beyond the property line. The placement of exterior lights is required to eliminate spillover illumination or glare onto adjoining properties to the maximum extent feasible, and not interfere with the normal operation or enjoyment of adjoining properties. In addition, Section 19.22.060 requires that all non-essential internal and exterior lighting be turned off after 11:00 p.m. (except for uses with extended hours).

4.1.2 Impact Analysis

Significance Thresholds

An aesthetic impact is considered significant if the addition of stadium lights would:

1 Have a substantial adverse effect on a scenic vista;
2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
3 Substantially degrade the existing visual character or quality of the site or its surroundings; or

4 Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The Initial Study (Appendix A) determined that the project would not damage scenic resources such as trees, rock outcroppings, or historic buildings within a state scenic highway corridor. Therefore, the analysis of aesthetic impacts focuses on thresholds 1, 3, and 4.

Methodology

Scenic Vistas and Visual Character Impacts. The analysis of scenic vistas and visual character is based on a field reconnaissance, supplementary review of Google Maps, and photo documentation of the stadium site. The scenic vistas discussion focuses on identified public view locations, but also considers impacts to private views. The visual character analysis considers whether or not the proposed lighting and public address systems would substantially and adversely degrade the overall aesthetic qualities of the site relative to current conditions.

Light Impacts. The analysis of light impacts is based on quantitative standards for illuminance applied to District projects. Illuminance is the quantity of incident light on a plane surface and is commonly measured in terms of foot-candles (Pennsylvania Outdoor Lighting Council n.d.). Light impacts can be analyzed by quantifying illuminance from the spillover of light, or "light trespass," at property lines nearest to residences. Light trespass is measured on both the vertical plane (e.g., light shining through a window) and the horizontal plane (e.g., light falling on a bed), in terms of foot-candles. In this analysis, the District has determined that light trespass would be significant if illuminance produced by the project would exceed two foot-candles, as measured on the vertical and horizontal planes at the property lines nearest to residences. This significance threshold for light impacts is consistent with the District's approach in the *PBC Parcels 1A and 1B Mitigated Negative Declaration* of June 2006 (NUSD 2006). The threshold is consistent with other California school districts' standards for light trespass, ranging from Glendale Unified School District's applied standard of 2.5 foot-candles on adjacent properties to the San Mateo Union High School District's applied standard of 0.8 foot-candles at the nearest residential property lines (Glendale Unified School District, 2012; San Mateo Union High School District, 2016).

Glare Impacts. This analysis makes a reasonable assumption that light intensity is representative of the amount of discomfort glare that residents near the stadium site would experience, because the visibility of a distant light source is proportional to its intensity (Hiscocks 2011). Discomfort glare is typically measured in terms of candelas. The amount of candelas depends on the luminous power per unit solid angle emitted by a point light source in a particular direction. In layman's terms, the degree of discomfort glare decreases the further that a viewer is located from a light source, due to the dispersion of light across distance.

This analysis assumes that a light intensity of 500 candelas or less at school property lines facing residences would result in no discomfort glare. In addition, the International Commission on Illumination (CIE) has set limits on candelas from outdoor lighting installations for lighting zones from E1 to E4 (CIE 2003). The E3 lighting zone, which applies to the stadium site, denotes areas of medium ambient brightness, such as urban residential areas (San Diego Unified School District 2014). In the E3 lighting zone, the CIE finds that light intensity from luminaires may not exceed 10,000 candelas during pre-curfew hours or 1,000 candelas during post-curfew hours (CIE 2003). These limits apply to each light source in directions where views of bright light sources are likely to be troublesome to residents but not where momentary or short-term viewing is involved.

Sky Glow. Sky glow impacts would be significant if the proposed lighting would emit a substantial amount of upward light, significantly increasing the brightness of the sky during nighttime hours.

Project Impacts and Mitigation Measures

THRESHOLD 1: WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT ON A LOCAL SCENIC VISTA?

Impact AES-1 THE ADDITION OF LIGHTS AND LIGHT POLES AT THE STADIUM WOULD INCREMENTALLY ALTER VIEWS OF AND THROUGH THE STADIUM SITE. HOWEVER, BECAUSE LIGHT POLES WOULD NOT SUBSTANTIALLY OBSTRUCT VIEWS OF SCENIC RESOURCES, IMPACTS TO SCENIC VISTAS WOULD BE LESS THAN SIGNIFICANT.

The project would introduce eight light poles up to 80 feet tall to the stadium site, incrementally altering existing views of and through the site. In addition, up to 36 poles (18 egress lighting poles and 18 public address system poles), each up to approximately 30 feet tall would be installed throughout the project site to provide lighting for safe egress and clean-up and to provide focused, distributed sound during athletic events. These structures would not substantially affect views from scenic roadways. While the segment of U.S. 101 to the north of SR 37 in Novato is eligible for State designation as a scenic highway, this highway is located approximately 2.3 miles east of the project site; distance, existing trees and vegetation, and intervening hillsides would obscure the proposed light and speaker poles from U.S. 101. However, the light and speaker poles would affect views of scenic resources from local residences and parks. As shown in Photo 4, residences on the east side of San Marin Drive have views across the stadium to the northwest of hillsides and ridgelines in the Mt. Burdell Open Space area. Existing deciduous and evergreen trees in the median of San Marin Drive partially obstruct these views. In addition, equestrians south of Novato Boulevard at Morning Star Farm in O'Hair Park have similar northward views of hillside, atop the one-to-two-story buildings at San Marin High School. New light and speaker poles would be partially visible in the foreground of views toward scenic hillsides and ridgelines. However, the narrow light and speaker poles would only occupy a sliver of the overall views through the stadium site. In addition, the approximately 30-foot tall egress lighting and speaker poles would be similar to existing poles on-site, such as the existing speaker poles behind the bleachers on the east side of the stadium, and similar to or shorter and narrower than the existing street lights on San Marin Drive (see Figure 5, Photo 2). The egress lighting and speaker poles would be partially screened by existing trees adjacent to the project site and would not substantially affect views of the surrounding hillsides and ridgelines (see Figure 6, Photo 4). The poles would have minimal impact to the overall viewshed from surrounding properties and would not substantially obstruct views of any identified scenic resources. Consequently, impacts to scenic vistas would be less than significant.

Mitigation Measures

No mitigation measures would be required.

SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant without mitigation.

THRESHOLD 3: WOULD THE PROJECT SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF THE SITE OR ITS SURROUNDINGS?

Impact AES-2 THE PROPOSED LIGHT POLES WOULD INCREMENTALLY ALTER DAYTIME AESTHETIC CONDITIONS AT THE STADIUM SITE. HOWEVER, LIGHT POLES WOULD NOT CONFLICT WITH THE VISUAL CHARACTER OF THE STADIUM'S VICINITY AND WOULD HAVE A NEGLIGIBLE EFFECT ON OVERALL VISUAL QUALITY. IMPACTS ON VISUAL CHARACTER AND QUALITY WOULD BE LESS THAN SIGNIFICANT.

The project would introduce eight light poles up to 80 feet tall to the stadium site, incrementally altering existing daytime visual character in the vicinity. In addition, up to 36 poles (18 egress lighting poles and 18 public address system poles), each up to approximately 30 feet tall would be installed throughout the project site to provide lighting for safe egress and clean-up and to provide focused, distributed sound during athletic events. As discussed in Impact AES-1, the new light and speaker poles would be partially visible from residences on the east side of San Marin Drive and from recreational users at O'Hair Park. In addition, Photo 1 shows that several residences on San Ramon Way have a direct southward line of sight toward the stadium. The light and speaker poles would be fully visible to these residences from a distance of at least 225 feet. In addition, Photo 3 shows that people using the Dwarf Oak Trail in the Mt. Burdell Open Space area would have direct southward views of the light and speaker poles from a distance of approximately 1,100 feet (0.2 miles). Although the new light and speaker poles would be partially or fully visible to neighboring residences and recreational users of open space areas, they would be narrow and would only occupy a sliver of the overall views through the stadium site. In addition, the approximately 30-foot tall egress lighting and speaker poles would be similar to existing poles on-site, such as the existing speaker poles behind the bleachers on the east side of the stadium, and similar to or shorter and narrower than existing street lights on San Marin Drive (see Figure 5, Photo 2). The egress lighting and speaker poles would be partially screened by existing trees adjacent to the project site and would not substantially affect views through the stadium site (see Figure 6, Photo 4). The light and speaker poles would be visually compatible with existing elevated structures at the stadium, including a flag pole at the southwest end of the field, yellow goal posts at each end, and bleachers and mounted speakers alongside the field. The mass, materials, architectural style, and surface treatments of the poles also would be typical of elements commonly seen at sports stadiums. Nighttime aesthetics impacts from light and glare are analyzed separately in Impacts AES-3 and AES-4. Therefore, impacts to daytime visual character and quality would be less than significant.

Mitigation Measures

No mitigation measures would be required.

SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant without mitigation.

THRESHOLD 4: WOULD THE PROJECT *CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE AREA?*

Impact AES-3 THE PROPOSED PROJECT WOULD INTRODUCE PERMANENT STADIUM LIGHTING USED FOR SPORTING COMPETITIONS, PRACTICES, AND OTHER EVENTS ON A SITE THAT LACKS EXISTING LIGHT SOURCES. BY DESIGN, THE STADIUM LIGHTING WOULD BE FOCUSED ON THE ATHLETIC FIELD AND WOULD MINIMIZE LIGHT TRESPASS. HOWEVER, LIGHTING COULD GENERAL LIGHT SPILLOVER EXCEEDING THE DISTRICT'S STANDARDS FOR ILLUMINANCE AT PROPERTY LINES FACING RESIDENCES. LIGHTING AND GLARE IMPACTS WOULD BE POTENTIALLY SIGNIFICANT, BUT MITIGABLE.

The project would introduce new permanent lighting at the San Marin High School stadium, which lacks existing on-site light sources. Table 8 ~~Table 7~~ summarizes the physical features and frequency of use of the proposed lighting system.

Table 8~~7~~ Characteristics of Proposed Stadium Lighting System

Lighting Feature	Details
Height of Lights	Approximately 30 to 80 feet
Number of Light Poles	8 tall poles (up to 80 feet in height) Up to 18 short poles (up to approximately 30 feet in height)
Lighting Type	Musco Light-Structure System LED (or equivalent)
Times of Use	Evening football, soccer, lacrosse games; evening football, soccer, lacrosse practices; track meets and practices; Powder Puff game, evening school events such as graduation

As shown in ~~Table 7~~ Table 8, the proposed eight primary LED light fixtures would rise to 80 feet in height. Downward-facing luminaires would be affixed at a height of approximately 80 feet on each pole to illuminate the stadium during sport competitions, practices, and other events. Additional downward-facing luminaires may be mounted at 70 feet on some poles in order to provide consistent illumination across the field surface. Lower output, upward-facing luminaires would be mounted at 20 feet on each pole in order to illuminate airborne objects such as footballs during ~~punts and kickoffs~~ games. A second set of lower output LED luminaires would be installed on up to 18 new and existing poles, each up to approximately 30 feet tall. These egress and clean-up lighting system poles would be spaced evenly around the perimeter of the track and also along pathways leading to ADA-compliant accessible parking spaces.

The project would introduce new permanent lighting to a stadium that lacks existing lighting, which would result in a substantial increase in lighting on the field when in use. However, the proposed type of lighting system (state-of-the-art LED system) is designed specifically to minimize light trespass and would be operated during restricted time frames before normal sleeping hours. First, the approximate 80-foot height of the brightest stadium lights would enable each luminaire to be mounted with a narrow beam angle, which would focus light downward while still covering the athletic field, thereby limiting light trespass at the nearest off-site residences approximately 120 feet away. While it may be counterintuitive that highly mounted light fixtures would reduce light trespass relative to lower fixtures, their narrower beam angle would emit less light visible to neighboring residences. The proposed light fixtures also would feature reflectors and visors to block upward light from the brightest fixtures. While lower-output luminaires mounted at 20 feet on each pole would cast light upward, these fixtures would only be lit ~~for brief periods such as punts and kickoffs~~ during ~~football~~ games to illuminate airborne objects such as footballs. The proposed stadium lights also would be used only during certain events, as shown in ~~Table 7~~ Table 8, with the main lights turned off at set times:

- Evening football games (~~16~~22 plus any playoff games per year) 8:30 ~~MP~~PM on Thursday and by 9:45 PM on Friday
- Evening soccer games (~~14~~20 on average per year plus any playoff games per year) by 8:30 PM on Tuesday through Saturday
- Evening lacrosse games (13~~16~~ on average per year plus any playoff games per year) by 8:30 PM on Monday through Saturday
- Evening track meets (two on average per year plus any Track Finals) by 8:30 PM on Wednesday and Thursday
- Scheduled evening athletic practice by 8:~~30~~00 PM on Monday through ~~Saturday~~ Friday
- Evening school events such as graduation by 9:45 PM
- Powder Puff game (one per year) by ~~9:45~~ 8:00 PM on Friday

The main stadium lights would be turned off by 9:45 PM or earlier, with the rare exception of games that extend to overtime, which could require the continued use of main stadium lights beyond this cut-off time. It is acknowledged that some neighbors of San Marin High School typically go to sleep before 9:45 PM. In addition, stadium lighting would emit light in the blue spectrum, exposure to which can suppress production of the hormone melatonin and impair sleep quality in the evening (American Medical Association 2016). However, the proposed stadium lights' narrow beam angle, reflectors, and visors would minimize the exposure of nearby residents to lighting that could potentially disturb sleep. Furthermore, unlike LED streetlights that are illuminated all night and have generated complaints from residents in cities like Davis, California, and Seattle, the proposed LED lights would be turned off by 8:30 PM most nights and by 9:45 PM fewer than ~~20~~ approximately 15 times per year for home football and Powder Puff games. The stadium lights would have a 9:45 PM cut-off time that precedes the Illuminating Engineering Society of North America's identified "post-curfew" hours of 10:00 PM or later, which correspond to normal sleeping hours.

Nevertheless, the proposed lighting system would produce illuminance in and around the stadium during its hours of use. Because a photometric study that estimates the brightness of light generated by a specific lamp, fixture, or group of fixtures at the stadium has not been prepared, it is not possible to determine whether the proposed lighting system would result in light trespass in excess of the quantitative threshold of two foot-candles at the boundaries of the stadium site. Nearby residences could be subject to excessive illuminance when stadium lights are in use. Therefore, lighting impacts are potentially significant.

Mitigation Measures

MM AES-3 Photometric Study

The District shall retain a qualified lighting consultant to prepare a photometric study in accordance with industry standards that estimates the vertical and horizontal foot-candles generated by the proposed stadium lighting on the football field and at the boundaries of the stadium site. The District shall coordinate with the lighting consultant to ensure that final design of the lighting system does not allow illuminance to exceed two horizontal or vertical foot-candles at any specific point on the site boundaries (i.e., at the perimeter of the stadium). In order to meet this standard for light trespass, the District may adjust the positioning of light fixtures alongside the football field, their shielding or intensity, or other design features. Final stadium lighting plans shall show light fixtures that generate no greater than two foot-candles at the site boundaries.

Significance After Mitigation

Implementation of Mitigation Measure AES-3 would ensure that the proposed stadium lighting system does not generate excessive significant light trespass at nearby residences. Impacts would be less than significant after mitigation.

THRESHOLD 4: WOULD THE PROJECT *CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE AREA?*

Impact AES-4 THE PROPOSED STADIUM LIGHTS WOULD BE VISIBLE FROM NEARBY RESIDENCES AND COULD GENERATE LIGHT INTENSITY IN EXCESS OF THE CIE'S INTERNATIONAL STANDARDS FOR THE E3 LIGHTING ZONE AT RESIDENTIAL PROPERTY LINES FACING THE STADIUM. IMPACTS FROM GLARE WOULD BE POTENTIALLY SIGNIFICANT, BUT MITIGABLE.

The proposed stadium lights would generate light intensity on-site at nearby residences, and on adjacent public streets and sidewalks. Light intensity at sports facilities can cause discomfort glare, an annoying or painful sensation when people are exposed to a bright light in the field of view (Shuster 2014). As discussed in Impacts AES-1 and AES-2, nearby residents would have at least partial views of the proposed stadium lights from San Ramon Way north of the stadium and east of San Marin Drive. Because a photometric study that estimates the brightness of light generated by a specific lamp, fixture, or group of fixtures at the stadium has not been prepared, it is not possible to determine whether the proposed lighting system would result in glare in excess of the CIE's standard of 10,000 candelas during pre-curfew hours in the E3 lighting zone. Nearby residences could be subject to excessive discomfort glare when stadium lights are in use. In addition, exposure to intense stadium lights could potentially cause "disability glare," a reduction of visibility, resulting in a safety issue for pedestrians and motorists next to the stadium on San Marin Drive. Therefore, impacts from glare are potentially significant.

MITIGATION MEASURES

MM AES-4 PHOTOMETRIC STUDY AND MINIMIZATION OF GLARE

The District shall retain a qualified lighting consultant to prepare a photometric study in accordance with industry standards that estimates the amount of discomfort glare to which nearby residents would be subjected when facing the proposed stadium lights. The photometric study shall use candelas as a measure of luminous intensity. The District shall coordinate with the lighting consultant to ensure that discomfort glare does not exceed 10,000 candelas at residential property lines facing the stadium. In order to meet this standard for glare and to minimize disability glare experienced by pedestrians and drivers on San Marin Drive, the District may adjust the positioning of light fixtures alongside the football field, their shielding or intensity, or other design features. Final stadium lighting plans shall show light fixtures that generate glare no greater than 10,000 candelas at surrounding residences.

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measure AES-4 would ensure that the proposed stadium lighting system does not generate excessive discomfort glare at nearby residences and public streets. Impacts would be less than significant after mitigation.

THRESHOLD 4: *CREATE A NEW SOURCE OF SUBSTANTIAL LIGHT OR GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS IN THE AREA*

Impact AES-5 THE PROPOSED STADIUM LIGHTS WOULD BE SHIELDED AND THE BRIGHTEST LIGHTS WOULD BE DOWNWARD-FACING TO REDUCE LIGHT TRESPASS. UPWARD-FACING LIGHTS WOULD ONLY BE USED ~~FOR SHORT DURATIONS TO ILLUMINATE AIRBORNE OBJECTS SUCH AS FOOTBALLS DURING PUNTS AND KICKOFFS~~ DURING GAMES AND WOULD BE DESIGNED TO PROVIDE ONLY THE MINIMUM AMOUNT OF ILLUMINATION NECESSARY TO SEE AIRBORNE OBJECTS IN THE STADIUM. THEREFORE, THE PROJECT WOULD NOT SUBSTANTIALLY INCREASE SKY GLOW. IMPACTS FROM SKY GLOW WOULD BE LESS THAN SIGNIFICANT.

As discussed in Impact AES-3, the proposed stadium lighting would be designed to minimize light trespass. The approximate 80-foot height of the brightest stadium lights would enable each luminaire to be mounted with a narrow beam angle, which would focus light downward, thereby limiting light trespass outside the athletic fields and reducing sky glow. The proposed light fixtures also would feature reflectors and a visor to block upward light. Although lower-output luminaires would be mounted facing upward at 20 feet on each light pole and would incrementally increase sky glow when in use by reflecting light off clouds and aerosols, these lights would only be used ~~for short durations to illuminate airborne objects such as footballs during punts and kickoffs~~ during games and would be designed to provide only the minimum amount of illumination necessary to see airborne objects in the stadium. Furthermore, the use of all stadium lights would be limited to ~~certain athletic events~~ approximately 152 nights of the year, approximately 83 of which would be games (this estimate includes the maximum number of playoff games that could be played in any given year). For most lighted evenings, the lights would be turned off by 8:30 PM or earlier. For approximately 15 or fewer nights per year, the ~~and~~ lights would be cut off by 9:45 PM in the evening. The minimal amount of sky glow that would be introduced with installation of the proposed lighting system would be limited to early evening hours (typically before 8:30 PM), would occur for a maximum of 152 nights per year, and would occur in a location with existing nighttime lighting (including street lamps along the adjacent roadway and security lighting on the adjacent campus). Therefore, they would not substantially contribute to sky glow during sensitive nighttime hours. The City of Novato, being located in the greater San Francisco Bay Area, also has nighttime skies that are subject to substantial existing light pollution, largely from sources in the U.S. 101 corridor, and that are not sensitive to additional artificial light. Therefore, the proposed stadium lights would not substantially contribute to sky glow near the school site, and impacts would be less than significant.

MITIGATION MEASURES
No mitigation measures would be required.

SIGNIFICANCE AFTER MITIGATION
Impacts would be less than significant without mitigation.

Cumulative Impacts

As discussed in Chapter 3, Environmental Setting, proposed and pending development in the City of Novato, and surrounding areas would include at least 151,294 square feet of non-residential development and 328 residential units. In some cases, new cumulative development projects would alter the aesthetic character of the City by introducing larger structures with greater development intensity. As discussed in Chapter 3, there are no cumulative projects within one mile of the project site. Therefore, there are no projects within the viewshed of the project. Therefore, impacts associated with the proposed project would not combine with other projects to cumulatively impact the aesthetics of the area. Furthermore, the proposed lighting and PA systems also would not represent an increase in

development intensity in these areas. In addition, as discussed in Impacts AES-3 through AES-5, the stadium lighting system would be designed to minimize light trespass and glare, with implementation of mitigation measures AES-3 and AES-4, and would not substantially contribute to nighttime sky glow in the area. Therefore, cumulative impacts for aesthetics would be less than significant with mitigation incorporated and the project's contribution to cumulative aesthetic impacts would not be cumulatively considerable.

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4.2 Air Quality

This section discusses the project's potential impacts to regional and local air quality. Both temporary impacts related to construction and long-term impacts associated with the project are discussed. Traffic projections used in emissions estimates are based on the *Transportation Impact Study Draft Report* prepared by DKS dated October 10, 2016. The traffic study is included as Appendix F to this EIR.

4.2.1 Setting

Regional Climate and Meteorology

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific Ocean. The City of Novato is located in Marin County, which is located within the San Francisco Bay Area Air Basin (SFBAAB). Air quality in the SFBAAB is affected by the emission sources located in the region, as well as by natural factors. Atmospheric conditions such as wind speed and direction, air temperature gradients, and local and regional topography influence air quality. The SFBAAB is affected by a Mediterranean climate of warm, dry summers and cool, damp winters. During the summer, maximum temperatures are about 64°F along the coast, and about 88°F farther inland. In winter, average minimum temperatures are in the low to mid-40s along the coast and in the low to mid-30s inland (Life Science!, Inc., 2004).

Topographical features, the location of the Pacific high-pressure system, and varying circulation patterns resulting from temperature gradients affect the speed and direction of local winds. The winds play a major role in the dispersion of pollutants. Strong winds can carry pollutants far from their source; a lack of wind will allow pollutants to concentrate in an area (Life Science!, Inc., 2004).

Air dispersion also affects pollutant concentrations. As altitude increases, air temperature normally decreases. Inversions occur when colder air becomes trapped below warmer air, restricting the air masses' ability to mix. Pollutants also become trapped, which promotes the production of secondary pollutants. Subsidence inversions, which can occur during the summer in the SFBAAB, result from high-pressure cells that cause the local air mass to sink, compress, and become warmer than the air closer to the earth. Pollutants accumulate as this stagnating air mass remains in place for 1 or more days (CDFG and USFWS 2004).

Air Pollutants of Primary Concern

The state and federal Clean Air Acts mandate the control and reduction of certain air pollutants. Under these Acts, the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for certain "criteria" pollutants. Ambient air pollutant concentrations are affected by the rates and distributions of corresponding air pollutant emissions, as well as by the climactic and topographic influences discussed above. The primary determinant of concentrations of non-reactive pollutants (such as carbon monoxide and suspended particulate matter) is proximity to major sources. Ambient CO levels in particular usually closely follow the spatial and temporal distributions of vehicular traffic. A discussion of primary criteria pollutants is provided below.

Ozone. Ozone is a colorless gas with a pungent odor. Most ozone in the atmosphere is formed as a result of the interaction of ultraviolet light, reactive organic gases (ROG), and oxides of nitrogen (NO_X). ROG (the organic compound fraction relevant to ozone formation, and sufficiently equivalent for the purposes of this analysis to volatile organic compounds, or VOC) is composed of non-methane hydrocarbons (with some specific exclusions), and NO_X is made of different chemical combinations of nitrogen and oxygen,

mainly NO and NO_2. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_X levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional rather than local scale, ozone is considered a regional pollutant.

Carbon Monoxide. Carbon monoxide (CO) is an odorless, colorless, gas. CO causes a number of health problems including fatigue, headache, confusion, and dizziness. The incomplete combustion of petroleum fuels in on-road vehicles and at power plants is a major cause of CO. CO is also produced during the winter from wood stoves and fireplaces. CO tends to dissipate rapidly into the atmosphere; consequently, violations of the State CO standard are generally associated with major roadway intersections during peak hour traffic conditions.

Localized carbon monoxide "hotspots" can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal Ambient Air Quality Standards (AAQS) of 35.0 parts per million (ppm) or the State AAQS of 20.0 ppm.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 ppm may occur. NO_2 absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. PM_{10} is small particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. They are a by-product of fuel combustion and wind erosion of soil and unpaved roads, and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Lead. Lead is a metal found naturally in the environment, as well as in manufacturing products. The major sources of lead emissions historically have been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed below, metal processing currently is the primary source of lead emissions. The highest level of lead in the air is generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers.

In the early 1970s, the USEPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. USEPA completed the ban prohibiting the use of leaded gasoline in highway vehicles in December 1995. As a result of USEPA's regulatory efforts to remove lead from gasoline, lead concentrations have declined substantially over the past several decades. The most dramatic reductions in lead emissions occurred

prior to 1990 due to the removal of lead from gasoline sold for most highway vehicles. Lead emissions were further reduced substantially between 1990 and 2008, with reductions occurring in the metals industries at least in part as a result of national emissions standards for hazardous air pollutants (USEPA, 2013).

Current Ambient Air Quality

CARB and the EPA establish ambient air quality standards for major pollutants at thresholds intended to protect public health. Federal and state standards have been established for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and fine particulates (PM_{10} and $PM_{2.5}$). Standards have been set at levels intended to be protective of public health. California standards are more restrictive than federal standards for each of these pollutants except for lead and the eight-hour average for CO.

Local air districts and CARB monitor ambient air quality to assure that air quality standards are met, and if they are not met, to also develop strategies to meet the standards. Air quality monitoring stations measure pollutant ground-level concentrations (typically, ten feet aboveground level). Depending on whether the standards are met or exceeded, the local air basin is classified as in "attainment" or "non-attainment." Some areas are unclassified, which means no monitoring data are available. Unclassified areas are considered to be in attainment. Table 9 ~~Table 8~~ summarizes the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) for each of these pollutants as well as the attainment status of the SFBAAB.

Table ~~9~~8 Ambient Air Quality and Basin Attainment

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.070 ppm	N	~~0.075~~ 0.070 ppm	N
	1 Hour	0.09 ppm	N		
Carbon Monoxide	8 Hour	9.0 ppm	A	9 ppm	A
	1 Hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide	1 Hour	0.18 ppm	A	0.100 ppm	U
	Annual Arithmetic Mean	0.030 ppm		0.053 ppm	A
Sulfur Dioxide	24 Hour	0.04 ppm	A	0.14 ppm	A
	1 Hour	0.25 ppm	A	0.075 ppm	A
	Annual Arithmetic Mean			0.030 ppm	A
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N		
	24 Hour	50 µg/m^3	N	150 µg/m^3	U
Particulate Matter - Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	~~15~~12 µg/m^3	U/A
	4 Hour			35 µg/m^3	N
Sulfates	24 Hour	25 µg/m^3	A		
Lead	Calendar Quarter			1.5 µg/m^3	A
	Rolling 3 Month Average			0.15 µg/m^3	
	30 Day Average	1.5 µg/m^3)			A
Hydrogen Sulfide	1 Hour	0.03 ppm	U		
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm	No information available		
Visibility Reducing particles	8 Hour(10:00 to18:00 PST)		U		

A=Attainment N=Nonattainment U=Unclassified; ~~mg/m^3 = milligrams per cubic meter~~ ppm=parts per million µg/m^3=micrograms per cubic meter

Source: Bay Area Air Quality Management District Website, ~~October 2015~~ January 2017: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status

As shown in ~~Table 8~~ Table 9, the SFBAAB is in nonattainment for the federal and state standards for ozone, as well as the state standard for particulate matter (PM_{10} and $PM_{2.5}$) and the federal standard for 24 hour $PM_{2.5}$.

The SFBAAB monitoring station located nearest to the project site is the San Rafael monitoring station, located approximately 11.3 miles northwest of the project site. Table 10 ~~Table 9~~ indicates the number of days each of the standards has been exceeded at this station in each of the last three years for which data is available. As indicated in the table, the PM_{10} 24-hour state air quality standard was exceeded one time in 2013 and the $PM_{2.5}$ 24-hour air quality standard was exceeded twice in 2013 and 2015, and once in 2014. The standards for CO, NO_2, and ozone have not been exceeded in the last three years.

Table 109 Ambient Air Quality Data

Pollutant	2013	2014	2015
Ozone, ppm - Worst Hour	0.070	0.068	0.070
Number of days of State exceedances (>0.09 ppm)	0	0	0
Number of days of Federal exceedances (>0.12 ppm)	0	0	0
Carbon Monoxide, ppm - Worst 8 Hours	*	*	*
Number of days of State/Federal exceedances (>9.0 ppm)	0	0	0
Nitrogen Dioxide, ppm - Worst Hour	0.0469	0.0624	0.0440
Number of days of State exceedances (>0.25 ppm)	0	0	0
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours	54.4	40.9	42.0
Number of samples of State exceedances (>50 $\mu g/m^3$)	1	0	0
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	0	0	0
Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours	44.9	38.1	36.3
Number of samples of Federal exceedances (>35 $\mu g/m^3$)	2	1	2

Source: CARB, 2013, 2014, & 2015 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php

* Insufficient data available to determine the value

Regulatory Setting

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the federal level, the USEPA administers the Clean Air Act (CAA). The CAA is administered by the CARB at the State level and by the Air Quality Management Districts at the regional and local levels. The BAAQMD regulates air quality at the regional level, which includes the nine-counties within the Bay Area.

Federal

The EPA is responsible for enforcing the federal CAA. The EPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). The NAAQS are required under the 1977 CAA and subsequent amendments. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g. beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by the CARB.

State

In California, the CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the State requirements of the federal CAA, administering the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS). The California CAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. The CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB established passenger vehicle fuel specifications, which became effective on March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Regional

The BAAQMD is primarily responsible for assuring that the national and State ambient air quality standards are attained and maintained in the Bay Area. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. The BAAQMD has jurisdiction over much of the nine-county Bay Area, including Marin County.

The BAAQMD, along with the other regional agencies (such as the Association of Bay Area Governments [ABAG] and the Metropolitan Transportation Commission [MTC]), has prepared the Ozone Attainment Plan to address the federal standard for ozone. The 2010 Clean Air Plan is the most recently approved regional Clean Air Plan (CAP). It was adopted in September 2010 and updated the Bay Area ozone plan. This plan provides an integrated, multi-pollutant strategy to improve air quality, protect public health, and protect the climate. The plan is designed to provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases in a single, integrated plan. The 2010 Clean Air Plan included Transportation Control Measures (TCMs) from the 2005 Ozone Strategy measures that were modified and expanded based on new investment and policy decisions as well as public input. In particular, the TCMs have been updated to reflect the policy and investment decisions made in the Metropolitans Transportation Commission's (MTC) regional transportation plan, Transportation 2035: Change in Motion. The 2010 Clean Air Plan is also based on population and employment forecasts from ABAG).

Sensitive Receptors near the Project Site

The ambient air quality standards described above were established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore residences, schools and hospitals. The school itself is a sensitive receptor and the nearest classrooms to the stadium track are located approximately 100 feet to the southwest. San Marin Drive borders the school to the east and Novato Boulevard borders the school to the south. Single-family residences and All Saints Lutheran Church are east of San Marin Drive. The City's approximately 98-acre O'Hair Park, which includes equestrian facilities at Morning Star Farm, the Dogbone Meadow dog park, and trails through open space areas, is located across Novato Boulevard south of the school. The Dwarf Oak Trail to Mt. Burdell and single-family residences on Sandy Creek Way abut the school site to the

west. Single-family residences on San Ramon Way are located north of the school, while multi-family residences on Aspen Drive are to the northeast. The nearest residences are located approximately 120 feet north and northeast of the stadium track.

4.2.2 Impact Analysis

Methodology and Significance Thresholds

On June 2, 2010, the BAAQMD adopted updated CEQA Air Quality Guidelines, which were again updated in May 2011. These guidelines describe the criteria that the BAAQMD proposed for use when reviewing and commenting on the adequacy of documents prepared under CEQA. The updated BAAQMD CEQA Air Quality Guidelines include recommended thresholds for use by Bay Area lead agencies in determining whether the proposed projects would have significant adverse air quality impacts, methodologies for predicting project emissions and impacts, and recommended measures that can be used to avoid or reduce significant air quality impacts.

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds contained in the BAAQMD's 2010 CEQA Guidelines. The court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the District to set aside the thresholds and cease dissemination of them until the Air District had complied with CEQA. The Air District has appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending there (BAAQMD, "Updated CEQA Guidelines" webpage, updated January 16, 2014). In view of the trial court's order which remains in place pending final resolution of the case, BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts. As such, lead agencies need to determine appropriate air quality thresholds of significance based on substantial evidence in the record. Lead agencies may rely on the BAAQMD's CEQA Guidelines (updated May 2012) for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures. However, as mentioned, the BAAQMD has been ordered to set aside the thresholds and is no longer recommending that these thresholds be used as a general measure of a project's significant air quality impacts. Lead agencies may continue to rely on the BAAQMD's 1999 Thresholds of Significance to make determinations regarding the significance of an individual project's air quality impacts based on substantial evidence in the record for that project.

The BAAQMD CEQA Air Quality Guidelines quantify these thresholds with defined numeric values and evaluation criteria for pollutant emissions. As noted above, although the Court of Appeal ruling with respect to the CEQA Air Quality Guidelines has been appealed and the Supreme Court has granted the petition for review, the District has decided that it will use the methodological approach and numeric thresholds in BAAQMD CEQA Air Quality Guidelines to determine whether the impacts of the project exceed the thresholds identified in Appendix G of the State CEQA Guidelines.

Significance Thresholds

Air quality impacts of the project would be significant if they would exceed the following thresholds of significance, which are based on Appendix G of the State CEQA Guidelines and the May 2011 BAAQMD CEQA Air Quality Guidelines:

1 Conflict with or obstruct implementation of the applicable air quality plan?

2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed qualitative thresholds for ozone precursors)?
4 Expose sensitive receptors to substantial pollutant concentrations?
5 Create objectionable odors affecting a substantial number of people?

As discussed in the Initial Study (Appendix A of this EIR), the project would not conflict with or obstruct implementation of the applicable air quality plan or create objectionable odors affecting a substantial number of people. Therefore, impacts related to Thresholds 1 and 5 would be less than significant and are not discussed further in this section; the analysis that follows focuses on the other remaining impact criteria listed above (Thresholds 2, 3, and 4).

Table 11~~Table 10~~ presents the significance thresholds for construction and operational-related criteria air pollutant and precursor emissions being used for the purposes of this analysis. These represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the Basin's existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction or operational emissions would exceed any of the thresholds shown in Table 11~~Table 10~~.[1]

Table 11~~10~~ Air Quality Thresholds of Significance

Pollutant/ Precursor	Maximum Annual Emissions (tpy)	Average Daily Emissions (lbs/day)
ROG	10	54
NO_X	10	54
PM_{10}	15	82
$PM_{2.5}$	10	54

Source: Table 2-2, Bay Area Air Quality Management District, CEQA Air Quality Guidelines, May 2011.

Notes: tpy = tons per year; lbs/day = pounds per day; NOX = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases; tpy = tons per year.

Construction Emissions Methodology

The project involves installation of stadium pole lighting at San Marin High School. The California Emissions Estimator Model (CalEEMod version 2013.2.2) was used to estimate air pollutant emissions associated with project construction. Construction activities associated with this development would result in temporary air quality impacts that may vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. Construction activities associated with development would generate diesel emissions and dust. Construction equipment that would generate criteria air pollutants includes excavators, cement trucks, and drill rigs. It is assumed that all construction equipment used would be diesel-powered. Electrically-powered equipment would not result in criteria pollutant or ozone precursor emissions. Therefore, the assumption that equipment would be diesel powered represents a worst-reasonable-case assumption for project construction activity.

[1] Note the thresholds for PM_{10} and $PM_{2.5}$ apply to construction exhaust emissions only.

Operational Emissions Methodology

Operational emissions include mobile source emissions, which are generated by the increase in motor vehicle trips to and from the project site associated with operation of the stadium lighting. Mobile source emissions were calculated using the Emission Factors (EMFAC) model developed by the California Air Resources Board and the average distance to the campus from the SMHS boundary for home-visitors (approximately 1.75 miles) and the average distance to competing schools for away-visitors (approximately 15 miles). Other typical sources of operational emissions include energy use (such as natural gas combustion) and area sources such as landscaping equipment, consumer products, and architectural coatings. However, the project would not result in natural gas combustion or an increase in area source emissions. Therefore, these sources are not discussed further. To determine whether a regional air quality impact would occur, the increase in operational emissions should be compared with the BAAQMD's recommended regional thresholds for operational emissions.

Project Impacts and Mitigation Measures

THRESHOLD 2: WOULD THE PROJECT VIOLATE ANY AIR QUALITY STANDARD OR CONTRIBUTE SUBSTANTIALLY TO AN EXISTING OR PROJECTED AIR QUALITY VIOLATION?

THRESHOLD 4: EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS?

IMPACT AQ-1 PROJECT CONSTRUCTION WOULD GENERATE TEMPORARY INCREASES IN LOCALIZED AIR POLLUTANT EMISSIONS. THESE EMISSIONS WOULD NOT CONTRIBUTE SUBSTANTIALLY TO AN EXISTING OR PROJECTED AIR QUALITY VIOLATION OR EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Project construction would generate temporary air pollutant emissions. These emissions are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust from heavy construction vehicles and equipment. The project would be required to comply with all BAAQMD rules and regulations regarding construction emission control measures. Construction would occur over approximately three months, as outlined in the Initial Study (Appendix A). Table 12~~Table 11~~ summarizes the estimated maximum daily emissions of pollutants during construction of the stadium lighting.

Table 12~~11~~ Estimated Construction Daily Air Pollutant Emissions

	Emissions (lbs/day)					
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X
Maximum Daily Emissions[a]	0.9	9.3	4.9	0.5	0.5	<0.1
BAAQMD Thresholds	*54*	*54*	*N/A*	*82*	*54*	*N/A*
Threshold Exceeded?	**No**	**No**	**N/A**	**No**	**No**	**N/A**

[a] See Table 2.1 "Overall Construction-unmitigated" of Winter emissions CalEEMod worksheets in Appendix C. N/A = not applicable; no BAAQMD threshold for CO or SO_X

As shown in Table 12~~Table 11~~, the BAAQMD construction emissions thresholds would not be exceeded. Because the project would not exceed BAAQMD thresholds for any pollutant, it would not expose sensitive receptors to substantial pollutant concentrations. Therefore, these impacts would be less than significant.

MITIGATION MEASURES
No mitigation measures would be required.

SIGNIFICANCE AFTER MITIGATION
Impacts would be less than significant without mitigation.

THRESHOLD 3: WOULD THE PROJECT RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS NON-ATTAINMENT UNDER AN APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARD (INCLUDING RELEASING EMISSIONS WHICH EXCEED QUALITATIVE THRESHOLDS FOR OZONE PRECURSORS)?

THRESHOLD 4: WOULD THE PROJECT EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS?

IMPACT AQ-2 THE PROJECT WOULD RESULT IN AN INCREASE IN OPERATIONAL AIR POLLUTANT EMISSIONS FROM DEVELOPMENT OF STADIUM LIGHTING AT SAN MARIN HIGH SCHOOL. HOWEVER, EMISSIONS WOULD NOT RESULT IN NET INCREASE IN ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS IN NON-ATTAINMENT UNDER APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARDS AND WOULD NOT EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS; THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As described in Section 4.2.2(a), long-term regional emissions from the project would be generated by mobile sources. Mobile emissions include the potential emissions generated by the traffic flow to and from the stadium during the times that the lights would be operational. However, this estimate is conservative because, as stated in the Initial Study, while the timing of some events would shift to evening and nighttime hours, the frequency of events per school year would not change from existing usage. In addition, combustion of any type of fuel emits criteria pollutants directly into the atmosphere; when this occurs on a project site, the project is a direct emission source. Operation of the project would not require the use of a generator. Therefore, direct criteria pollutants would only result from mobile emissions associated with the project. Mobile source emissions were calculated using the Emission Factors (EMFAC) model developed by the California Air Resources Board and the average distance to the campus from the SMHS boundary for home-visitors (approximately 1.75 miles) and the average distance to competing schools for away-visitors (approximately 15 miles). The project would be connected to the electricity grid and operation of the stadium lights would use electricity generated off-site and supplied by Pacific Gas and Electric. Complete emissions calculation results and assumptions can be viewed in Appendix C. Table 13~~Table 12~~ summarizes the maximum daily operational emissions resulting from the project.

Table 13~~12~~ Estimated Project Operational Emissions

	Estimated Emissions (lbs/day)					
Sources	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_X**
Area	N/A	N/A	N/A	N/A	N/A	N/A
Energy[2]	N/A	N/A	N/A	N/A	N/A	N/A
Mobile	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Total Emissions (lbs/day)	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
BAAQMD Thresholds	*54*	*54*	*N/A*	*82*	*54*	*N/A*
Threshold Exceeded?	**No**	**No**	**N/A**	**No**	**No**	**N/A**

Source: Calculations were made using EMFAC. See emissions calculations in Appendix C. Tons per year converted to average pounds per day. Note: numbers may not add up due to rounding. No BAAQMD threshold for CO or SO_x. N/A not applicable. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coatings and will not be generated by operation the project; additionally, there are no air quality impacts due to electricity as they are emitted elsewhere and air quality is a local issue.

As shown in Table 13~~Table 12~~, emissions would not exceed BAAQMD thresholds for any criteria pollutant, and based on the small amount of emissions relative to the BAAQMD thresholds, the project would not expose sensitive receptors to substantial pollutant concentrations. Additionally, the project involves a construction timeframe of approximately three months or less and does not include any on-site sources of long-term (operational) emissions. Consequently, the impact of the project's operational emissions on regional air quality under Thresholds 3 and 4 would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Cumulative Impacts

The SFBAAB is in nonattainment for the federal and state standards for ozone, as well as the state standard for particulate matter (PM_{10} and $PM_{2.5}$) and the federal standard for 24 hour $PM_{2.5}$. Any growth within the SFBAAB would contribute to existing exceedances of ambient air quality standards when taken as a whole with existing development. However, as discussed in the Initial Study, Subsection III(a) (Appendix A of this EIR), the project would not result in an increase in regional population or other growth that is not anticipated under the 2010 Bay Area CAP; therefore, implementation of the project would not conflict with or obstruct the implementation of the 2010 Bay Area CAP. In addition, as discussed above in this section, all air pollutant emissions would be below BAAQMD thresholds. Therefore, the project's contribution to cumulative regional air quality impacts would not be cumulatively considerable.

[2] The project would indirectly produce criteria pollutant emissions by using electricity; however, electricity suppliers are regulated separately by the BAAQMD as stationary sources. As such, energy emissions are shown as N/A in Table 13

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4.3 Cultural Resources

The analysis in this section has been prepared in accordance with Section 15064.5 of the CEQA Guidelines, which considers potential impacts to archaeological, historic, and paleontological resources. This section includes a brief summary of cultural resources background information; review of known archaeological, built environment, and paleontological resources; and mitigation measures.

4.3.1 Setting

Regulatory Setting

Cultural resources, including built environment and archaeological resources, may be designated as historic by National, State or local authorities. For a resource to qualify for listing in the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR) or as a locally significant resource, it must meet one or more identified criteria of significance. The resource must also retain sufficient historic integrity, which is defined in *National Register Bulletin 15* as the "ability of a property to convey its significance" (National Park Service [NPS] 1990).

Federal Regulations

Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act (NHPA) through one of its implementing regulations, 36 Code of Federal Regulations (CFR) 800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the NHPA. Other relevant federal laws include the Archaeological Data Preservation Act of 1974, American Indian Religious Freedom Act of 1978, Archaeological Resources Protection Act of 1979, and Native American Graves Protection and Repatriation Act of 1989.

NATIONAL HISTORIC PRESERVATION ACT (NHPA) OF 1966 (16 U.S.C. §§ 470 ET SEQ.)

NHPA is a federal law created to avoid unnecessary harm to historic properties. The NHPA includes regulations that apply specifically to federal land-holding agencies, but also includes regulations (Section 106) that pertain to all projects funded, permitted, or approved by any federal agency that have the potential to affect cultural resources. Provisions of NHPA establish a National Register of Historic Places (the NRHP is maintained by the National Park Service), the Advisory Council on Historic Preservation, State Historic Preservation Office (SHPO), and federal grants-in-aid programs.

National Register Historic Places

The National Register of Historic Places (NRHP) was established by the NHPA of 1966 as "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (CFR 36 CFR 60.2). The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria:

Criterion A: It is associated with events that have made a significant contribution to the broad patterns of our history;

Criterion B: It is associated with the lives of persons who are significant in our past;

Criterion C: 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; and/or

Criterion D: It has yielded, or may be likely to yield, information important in prehistory or history.

AMERICAN INDIAN RELIGIOUS FREEDOM ACT OF 1978 (42 U.S.C. §§ 1996 AND 1996A)

The American Indian Religious Freedom Act of 1978 and Native American Graves and Repatriation Act of 1990 (25 U.S.C. §§ 3001 et seq.) establishes that traditional religious practices and beliefs, sacred sites, and the use of sacred objects shall be protected and preserved.

SECRETARY OF THE INTERIOR'S STANDARDS

The Secretary of the Interior is responsible for establishing professional standards and providing guidance related to the preservation and protection of all cultural resources listed in or eligible for listing in the NRHP.

A variety of federal statutes specifically address paleontological resources. They generally become applicable if the project involves: 1) a federal agency license, permit, approval, or funding, and/or 2) crosses federal lands. Since federal funding for this proposed project may become established, the following laws and regulations apply.

ARCHAEOLOGICAL AND PALEONTOLOGICAL SALVAGE (23 USC 305)

Statute 23 USC 305 amends the Antiquities Act of 1906. Specifically, it states:

Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in that state in compliance with the Act entitled "An Act for the preservation of American Antiquities," approved June 8, 1906 (PL 59-209; 16 USC 431-433), and State laws where applicable.

This statute allows funding for mitigation of paleontological resources recovered pursuant to federal aid highway projects, provided that "excavated objects and information are to be used for public purposes without private gain to any individual or organization" (Federal Register [FR] 46(19):9570).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969

NEPA (United States Code, section 4321 et seq.; 40 Code of Federal Regulations, §1502.25), as amended, directs Federal agencies to "Preserve important historic, cultural, and natural aspects of our national heritage (§101(b) (4))."

PALEONTOLOGICAL RESOURCES PRESERVATION ACT OF 2009

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). This act directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. It prohibits the removal of paleontological resources from federal land without a permit issued under this Act, establishes penalties for violation of this act and establishes a program to increase public awareness about such resources. As of May 18, 2015, the U.S. Department of Agriculture has implemented a new rule that "provides for the preservation, management, and protection of paleontological resources on National Forest System Lands (NFS), and insures that these resources are available for current and future generations to enjoy as part of America's national heritage. The rule addresses the management, collection, and curation of paleontological resources from NFS lands including management using scientific principles and expertise, collecting of resources with and without a permit, curation in an

approved repository, maintaining confidentiality of specific locality data, and authorizing penalties for illegal collecting, sale, damaging, or otherwise altering or defacing paleontological resources".

State Regulations

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires a lead agency to analyze whether historic and/or archaeological resources may be adversely impacted by a proposed project. Under CEQA, a "project that may cause a substantial adverse change in the significance of a historic resource is a project that may have a significant effect on the environment" (California PRC Section 21084.1). Answering this question is a two-part process: first, the determination must be made as to whether the proposed project involves cultural resources; second, if cultural resources are present, the proposed project must be analyzed for a potential "substantial adverse change in the significance" of the resource.

With regards to paleontological resources, CEQA Guidelines (Article 1, §15002(a)(3)) state that CEQA is intended to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible. If paleontological resources are identified during the Preliminary Environmental Analysis Report, or other initial project scoping studies (e.g., Preliminary Environmental Study), as being within the proposed project area, the sponsoring must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

California Register of Historical Resources

The California Register of Historical Resources (California Register) is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The California Register helps government agencies identify, evaluate, and protect California's historical resources, and indicates which properties are to be protected from substantial adverse change (Pub. Resources Code, Section 5024.1(a)). The California Register is administered through the State Office of Historic Preservation (SHPO) that is part of the California State Parks system.

A cultural resource is evaluated under four California Register criteria to determine its historical significance. A resource must be significant at the local, state, or national level in accordance with one or more of the following criteria set forth in the State CEQA Guidelines at Section 15064.5(a)(3):

1) *It is associated with events that have made a significant contribution to the broad pattern of California's history and cultural heritage;*
2) *It is associated with the lives of persons important in our past;*
3) *It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or*
4) *It has yielded, or may be likely to yield, information important in prehistory or history.*

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time must have passed to allow a "scholarly perspective on the events or individuals associated with the resource." Fifty years is used as a general estimate of the time needed to understand the historical importance of a resource according to SHPO publications. The California Register also requires a resource to possess integrity, which is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association." Archaeological resources can sometimes qualify as "historical resources" [State CEQA Guidelines, Section 15064.5(c)(1)].

According to CEQA, all buildings constructed over 50 years ago and that possess architectural or historical significance may be considered potential historic resources. Most resources must meet the 50-year threshold for historic significance; however, resources less than 50 years in age may be eligible for listing on the CRHR if it can be demonstrated that sufficient time has passed to understand their historical importance.

In addition, if a project can be demonstrated to cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC, Section 21083.2[a], [b], and [c]).

PRC, Section 21083.2(g) defines a *unique archaeological resource* as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; or
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Two other programs are administered by the state: California Historical Landmarks and California "Points of Historical Interest." California Historical Landmarks are buildings, sites, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value. California Points of Historical Interest are buildings, sites, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value.

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. These impacts could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired (CEQA Guidelines, Section 15064.5 [b][1], 2000). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register… (CEQA Guidelines, Section 15064.5[b][2][A]).

Regulations Pertaining to Human Remains

Section 15064.5 of the CEQA Guidelines also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. The disposition of human remains is governed by Health and Safety Code Section 7050.5 and PRC Sections 5097.94 and 5097.98, and falls within the jurisdiction of the NAHC. Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, the County Coroner must be notified within 48 hours and there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the County Coroner has determined whether or not the remains are subject to the coroner's authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. State CEQA Guidelines Section 15064.5 directs the lead agency

(or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Assembly Bill 52

California Assembly Bill 52 (AB 52), enacted on July 1, 2015, expands CEQA by establishing a formal consultation process for California tribes within the CEQA process. The bill specifies that any project that may affect or cause a substantial adverse change in the significance of a tribal cultural resource would require a lead agency to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." According to the legislative intent for AB 52, "tribes may have knowledge about land and cultural resources that should be included in the environmental analysis for projects that may have a significant impact on those resources." Section 21074 of AB 52 also defines a new category of resources under CEQA called "tribal cultural resources." Tribal cultural resources are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and is either listed on or eligible for the California Register of Historical Resources or a local historic register, or if the lead agency chooses to treat the resource as a tribal cultural resource. See also PRC 21074 (a)(1)(A)-(B).

PUBLIC RESOURCES CODE SECTION 5097.5

California Public Resources Code Section 5097.5 prohibits excavation or removal of any "vertebrate paleontological site…or any other archaeological, paleontological or historical feature, situated on public lands, except with express permission of the public agency having jurisdiction over such lands." Public lands are defined to include lands owned by or under the jurisdiction of the state or any city, county, district, authority or public corporation, or any agency thereof. Section 5097.5 states that any unauthorized disturbance or removal of archaeological, historical, or paleontological materials or sites located on public lands is a misdemeanor.

Environmental Setting

The project site is located in western Novato, Marin County with surface elevations at approximately 25 to 50 feet above mean sea level. The project site is developed and is the location of sports facilities for San Marin High School. Novato Creek is located to the south and the project site is surrounded by residential neighborhoods.

Geological Setting

The Project Site is located in the Novato Creek valley, in the Coast Range geomorphic province. The valley is bounded by Burdell Mountain to the north and Big Rock Ridge to the south (Rice et al. 2002; Rice 1975).

The predominant structural feature in the California Coast Ranges is the San Andreas Fault Zone, which separates two tectonic plates; the Pacific Plate to the southwest of the fault and the North American Plate northeast of the fault. The project site is located in an alluvial valley bound by northwest-southeast trending ridges situated midway between the San Andreas Fault Zone on the west (approximately 11 miles) and the Rogers Creek Fault Zone to the east (approximately 9 miles) (Graymer et al. 2006a). The Coast Ranges in the Bay Area portion contains Cretaceous to Recent sediments overlying late Cretaceous basement rocks (Graymer et al. 2006b). During the late Cenozoic (Neogene and Quaternary Periods), numerous areas of the Coast Ranges were variably uplifted and downwarped thousands of feet and transposed along lateral faults (Galehouse 1967). All of this relatively late geotectonic dynamism has created a complex series of fault-bounded blocks and depositional basins that have undergone filling and erosion since at least the Miocene. The project site is within one such fault-bounded depositional basin, the southern Novato Creek valley.

Two geological units are mapped at the surface within the project site (Rice et al. 2002; Rice 1975): Pleistocene older alluvium (Qoa of Rice et al. 2002; Qa of Rice 1975) and Cretaceous-Jurassic Franciscan Complex mélange (KJfm of Rice et al. 2002; fm of Rice 1975) (Figure 7).

Cultural Setting

Prehistory

The project APE lies in the San Francisco Bay Area archaeological region (Milliken et al. 2007; Moratto 1984). Following Milliken et al. (2007), the prehistoric cultural chronology for the Bay Area can be generally divided into five periods: the Early Holocene (8,000-3,500 B.C.), Early (3,500-500 B.C.), Lower Middle (500 B.C. to A.D. 430), the Upper Middle (A.D. 430-1050), and the Late Period (A.D. 1050-Contact). Early Paleoindian groups likely lived in the area prior to 8,000 B.C.; however, no evidence for that period has been discovered in the Bay Area to date (Milliken et al. 2007). For this reason, the late Pleistocene to early Holocene transition period (ca. 11,700-8,000 B.C.) is not discussed here.

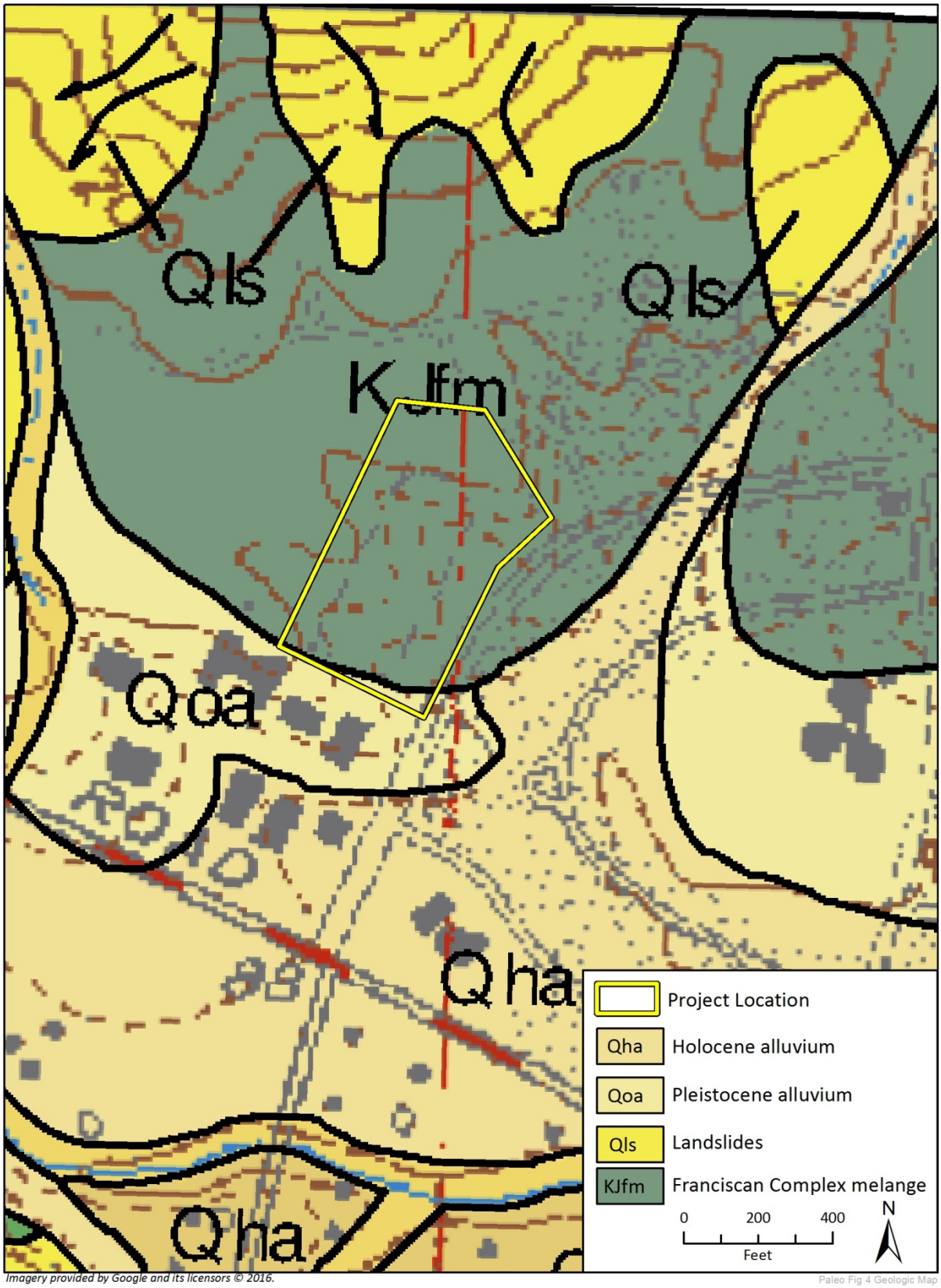
The earliest intensive study of the archaeology of the San Francisco Bay Area began with N.C. Nelson of the University of California, Berkeley, between 1906 and 1908. He documented over 400 shell mounds along the shores of San Francisco, San Pablo, and Suisun Bays and was the first to identify the Bay Area as a discrete archaeological region (Moratto 1984).

The Early Holocene in the San Francisco Bay Area is characterized by a mobile forager pattern and the presence of millingslabs, handstones, and a variety of leaf-shaped projectile points, though evidence for this period is limited. It is likely that Holocene alluvial deposits buried many prehistoric sites in the area (Moratto 1984; Ragir 1972). Sites such as CA-CCO-696 and CA-CCO-637 in Contra Costa County are two of just a few sites dating to this period. The earliest date for the Early Holocene comes from the CA-CCO-696 at Los Vaqueros Reservoir (Milliken et al. 2007).

The Early Period saw increased sedentism from the Early Holocene as indicated by new ground stone technologies (introduction of the mortar and pestle), an increase in regional trade, and the earliest cut-bead horizon. The first documentation of the mortar and pestle, dating to 3,800 B.C., comes from CA-CCO-637 in the Los Vaqueros Reservoir area. By 1,500 B.C., mortars and pestles had almost completely replaced millingslabs and handstones. A shift to a sedentary or semi-sedentary lifestyle is marked by the prevalence of mortars and pestles, ornamental grave associations, and shell mounds. The earliest cut bead horizon, dating to this period, is represented by rectangular *Haliotis* (abalone) and *Olivella* (snail) beads from several sites, including CA-CCO-637 (Los Vaqueros Reservoir), CA-SCL-832 (Sunnyvale), and CA-ALA-307 (Berkeley) (Meyer and Rosenthal 1998; Milliken et al. 2007). The advent of the mortar and pestle indicate a greater reliance on processing nuts such as acorns. Faunal evidence from various sites indicates a diverse diet based on mussel and other shellfish, marine mammals, terrestrial mammals, and birds (D'Oro 2009).

The Lower Middle Period saw numerous changes from the previous period. Rectangular shell beads, common during the Early Period, disappear completely and are replaced by split-beveled and saucer *Olivella* beads. In addition to the changes in beads, *Haliotis* ornaments, bone tools and ornaments, and basketry awls indicating coiled basketry manufacture appeared. Mortars and pestles continued to be the dominant grinding tool (Milliken et al. 2007). Evidence for the Lower Middle Period in the Bay Area comes from sites such as the Emeryville shell mound (CA-ALA-309) and Ellis Landing (CA-CCO-295). CA-ALA-309 is one of the largest shell mounds in the Bay Area and contains multiple cultural sequences. The lower levels of the site, dating to the Middle Period, contain flexed burials with bone implements, chert bifaces, charmstones, and oyster shells (Moratto 1984).

Figure 7Geologic Map



Around A.D. 430, at the beginning of the Upper Middle Period, *Olivella* saucer bead trade networks established during earlier periods collapsed and over half of known sites occupied during the Lower Middle Period were abandoned. *Olivella* saucer beads were replaced with *Olivella* saddle beads. New items appear at sites, including elaborate, decorative blades, fishtail charmstones, new *Haliotis* ornament forms, and mica ornaments. Sea otter bones became more frequent from earlier periods (Milliken et al. 2007). Excavations at CA-ALA-309 have indicated a shift from oysters to clams at that site. Subsistence analysis at various sites dating to this period indicate a diverse diet that included various species of fish, mammal species, bird species, shellfish, and plant resources that varied by location within the Bay Area (Hylkema 2002).

The Late Period saw an increase in social complexity, indicated by differences in burials, and an increased level of sedentism relative to preceding periods. Small, finely worked projectile points associated with bow and arrow technology appear around A.D. 1250. *Olivella* shell beads disappeared and were replaced with clamshell disk beads. The toggle harpoon, hopper mortar, and magnesite tube beads also appeared during this period (Milliken et al. 2007). This period saw an increase in the intensity of resource exploitation that correlates with an increase in population (Moratto 1984). Many of the well-known sites of earlier periods, such as the Emeryville shell mound (CA-ALA-309) and the West Berkeley site (CA-ALA-307) were abandoned, possibly due to fluctuating climates and drought that occurred throughout the Late Period (Lightfoot and Luby 2002).

Ethnography

The project APE lies within an area traditionally occupied by the Coast Miwok. Coast Miwok territory is centered on Marin and Sonoma Counties, extending roughly from Duncan's Point south to Point Bonita, with the inland boundary east of the Sonoma River (Kelly 1978:414; Kroeber 1925:443). The Miwok Language consists of two dialect groups, the southern, or Marin group, and the western, or Bodega group (Kelly 1978:414).

The pre-contact Coast Miwok inhabited villages made up of conical dwellings, semi-subterranean sweathouses, and dance houses (Kelly 1978:417). Each village had a chief to oversee village affairs and social and ceremonial life was organized around moieties, or dichotomous groups, classed as either Land or Water (Kelly 1978:419).

Coast Miwok subsistence was based on hunting, gathering, and fishing (Kelly 1978: 415-417). Dried acorns and kelp were primary food sources during the winter and early spring when food was scarce. Coast Miwock relied heavily on nearshore fish and shellfish and on fish from rivers, marshes, and the bay. Hunting focused on deer, elk, bear, and small game. The material culture of the Coast Miwok included clamshell disk beads as currency, and a variety of stone tools, shell ornaments, ceremonial artifacts, and baskets (Kelly 1978: 417-418).

History

Post-European contact history for the state of California is generally divided into three periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present).

SPANISH PERIOD (1769-1822)

For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003). In 1579, Francis Drake landed in what was most likely San Francisco Bay. In 1595, Sebastian Cermeño landed in Drake's Bay before returning south (Bean 1968).

Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Portolá continued north, reaching the San Francisco Bay in 1769. Short on food and supplies, the expedition turned back to San Diego. In 1770, Pedro Fages began his expedition, reaching the San Francisco Bay Area and exploring the region in 1772 (Cook 1957).

In 1770, the mission and presidio at Monterey were founded and three years later Juan Bautista de Anza proposed to open a land route from Sonora to Monterey. The viceroy at the time, Antonio de Bucareli, sanctioned Anza's expedition and proposed he extend it to form a settlement at the bay of San Francisco. Anza's first expedition traveled from Mexico City to Monterey. During this time, various sea expeditions from Monterey discovered Nootka Sound, the Columbia River, and the Golden Gate. Anza's second expedition began in 1775 leading to the establishment of the presidio and mission at San Francisco, Mission Dolores, approximately 22 miles south of the City of Novato (Bean 1968). Spanish colonial activity in the Bay Area concentrated on Mission Dolores and the presidio. Mission San Rafael Arcangel, the mission nearest the City of Novato, was founded in 1817 (California Mission Resource Center 2016).

MEXICAN PERIOD (1822-1848)

The Mexican Period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period saw the federalization of mission lands in California with the passage of the Secularization Act of 1833. This Act enabled Mexican governors in California to distribute former mission lands to individuals in the form land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time (Shumway 2006). Rancho Novato, which included the location of the City of Novato, was granted to Fernando Feliz in 1839 by Governor Alvarado. Rancho Nicasio, which included what is now the western portion of the City of Novato, was granted by Governor Micheltorena to Pablo de la Guerra and Juan Cooper in 1844.

The Mexican Period saw an increased importance of sea trade and an influx of American settlers which motivated the United States to expand their territory into California. The United States supported a small group of insurgents from Sonoma during the Bear Flag Revolt. The Bear Flaggers captured Sonoma in June of 1846. The next month, Commodore John Drake Sloat landed in Monterey and proceeded to capture Yerba Buena, Sutter's Fort, Bodega Bay, and Sonoma. Fighting between American and Mexican forces continued until Mexico surrendered in 1847 (Rolle 2003).

AMERICAN PERIOD (1848-PRESENT)

The American Period began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. Settlement of California continued to increase during the early American Period. Many ranchos were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns.

Thanks to the discovery of gold in 1848, California's population grew exponentially. San Francisco grew from a population of 812 to 25,000 in only a few years and became California's first true city (Rolle 2003).

CITY OF NOVATO

Rancho Novato changed hands and was subdivided several times after it was first granted (Coady 2005). Residential lots were first put up for sale in 1888 and by 1918 First through Seventh Streets were laid out and developed. Novato grew steadily throughout the early twentieth century. In the late 1920s, construction began at Hamilton Air Force Base, resulting in major economic growth for the region and an eventual population boom when World War II brought numerous recruits and their families to the base (Coady 2005). The Novato Fire District was formed in 1926, and in 1954 Novato became the first

community in Marin County to form a unified school district. In 1960, Novato was incorporated as a City and has continued to grow in population.

4.3.2 Existing Conditions

4.3.2.1 Cultural Resources

Cultural Resources Records Search

A search of California Historical Resources Information System (CHRIS) records conducted at the Northwest Information Center (NWIC) identified 20 previous studies within a 0.5-mile radius of the project site (Table 14~~13~~). Most of these were small surveys of limited scope. All of these are outside the project site.

Table 14~~13~~ Previously Conducted Cultural Resource Studies within a 0.5-Mile Radius of the Project Site

NWIC Report No.	Author	Year	Study	Proximity to Project Site
S-001008	Thomas L. Jackson	1976	Preliminary Archaeological Reconnaissance of the 45.6 acre "Lands of Exxon" property	Outside
S-001008a	Thomas L. Jackson	1978	Completion of Several Areas of Study on the "Lands of Exxon"	Outside
S-001159	Katherine Flynn	1978	Novak Development Company's property east of Novato Blvd. and north of San Marin High School (APN 124-020-13, 14, & 15) (ARS 78-72)-Archaeological Reconnaissance	Outside
S-001709	Barry Price	1979	Archaeological reconnaissance of a 7.03 acre parcel on San Marin Drive in Novato	Outside
S-005652	William Roop, Margaret Duddy, Katherine Flynn, and Terrance Schuster	1982	Report of the Limited Salvage Excavations Conducted within 04-Mrn-524, a Prehistoric Burial Site in Novato, California	Outside
S-006481	Katherine Flynn	1984	Archaeological and Historical Survey Study of Area of Potential Environmental Impact, Proposed Improvements to Novato Boulevard between Grant and Eucalyptus Avenues, Novato (FAU Project No. 73-019)	Outside
S-007209	William Roop	1985	Archaeological survey of the Doe Hill (Little Mountain) project area, job number 5255	Outside
S-012241	Thomas L. Jackson	1976	A preliminary archaeological reconnaissance of the proposed Spring Creek Subdivision, Novato, California	Outside
S-012843	William Roop	1990	Archaeological evaluation of the Marks Parcel, 870 Sutro Ave., Novato. Job 242-030.	Outside
S-013217	Thomas M. Origer	1990	An Archaeological Survey for the AT&T Fiber Optics Cable, San Francisco to Point Arena, California	Outside
S-013400	Thomas M. Origer	1990	Archaeological findings regarding a selection of a route through Novato for the AT&T fiber optics cable	Outside
S-016418	Christian Gerike	1994	Archaeological Study of the Brookside Meadow Property, Novato, Marin County, California	Outside
S-017529	Thomas L. Jackson	1978	An archaeological survey of the proposed Willow Hill Development, Novato, California	Outside
S-030931	William Roop and Katherine Flynn	1998	A Cultural Resources Evaluation of the Thorsson Property, 2285 Novato Boulevard, Novato, Marin County	Outside
S-032802	Allen G. Pastron and R. Keith Brown	2000	Historical and Cultural Resource Assessment, Proposed Telecommunications Facility, Apple Market, Site No. SF-205-01, 199 San Marin Drive, Novato, California	Outside
S-033959	Thomas M. Origer, Sandra Ledebuhr, and Eileen Steen	2007	Investigations at CA-MRN-365, Located in Miwok park, City of Novato, Marin County, California	Outside
S-034403	Lorna Billat	2007	New Tower ("NT") Submission Packet, FCC Form 620, San Marin Plaza, SF-18620A	Outside
S-036790	Wayne Bonner and Sarah Williams	2009	Cultural Resources Records Search and Site Visit for AT&T Mobility, LLC Candidate CN0673 (Novato Boulevard), 155 San Marin Drive, Novato, Marin County, California	Outside
S-042782	Eileen Barrow	2013	A Cultural Resources Survey for the Bocce Court Expansion Project at Miwok Park, 2200 Novato Blvd (APN 124-102-18) Novato, Marin County, CA	Outside
S-042786	Eileen Barrow	2013	A Cultural Resources Survey for the Marin Museum of the American Indian Project at 2200 Novato Blvd. (APN 124-102-18) Novato, Marin County, California	Outside

The CHRIS records search identified seven (7) previously recorded cultural resources within a 0.5-mile radius of the project site (Table 1514). The seven resources are all prehistoric archaeological sites; in three (3) of which human remains were identified (P-21-000337, -000543, -000561). No resources are located within the project site (Table 1514). It appears that none of the prehistoric archaeological sites have been formally evaluated for significance or eligibility to the NRHP or CRHR.

Table 1514 Previously Recorded Cultural Resources within a 0.5-Mile Radius of the Project Site

Trinomial	Primary Number	Description	Site Type	NRHP/CRHR Eligibility Status	Recorded/ Updated By and Year	Proximity to Project Site
	C-112	SFSC-3*	Prehistoric	Unknown	No report, 1987	Outside
CA-MRN-365	P-21-000337	midden w/human remains	Prehistoric	Not evaluated (NRHP code 7); Presumed eligible	Recorded by Elsasser 1961; updated by King 1966, Origer 2013	Outside
CA-MRN-366	P-21-000338	shell, chert, obsidian	Prehistoric	Unknown	Recorded by Elsasser 1963	Outside
CA-MRN-420	P-21-000382	petroglyphs	Prehistoric	Unknown	Recorded by Miller 1974	Outside
CA-MRN-481	P-21-000433	petroglyphs	Prehistoric	Unknown	Recorded by Flynn and Roop 1978	Outside
CA-MRN-384	P-21-000543	human remains	Prehistoric	Presumed eligible	Recorded by King 1966	Outside
CA-MRN-524	P-21-000561	human remains	Prehistoric	Presumed eligible	Recorded by Flynn and Roop 1982	Outside

* Labeled as “informal resource” in NWIC database

Cultural Resources Field Survey

Rincon conducted an intensive pedestrian cultural resources survey of the project site on November 15, 2016. The survey consisted of walking parallel transects, oriented roughly east-west, and spaced no greater than 5 meters apart, across the open field areas northeast of the stadium. Rincon personnel examined all areas of exposed ground surface for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock [FAR]), soil discoloration that might indicate the presence of a cultural midden, soil depressions, features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). No cultural resources were identified in the project site during the survey.

Native American Heritage Commission Sacred Lands File Search

As part of the process of identifying cultural resources issues within or near the project site Rincon contacted the Native American Heritage Commission (NAHC) and requested a review of the Sacred Lands Files (SLF) and a list of Native American individuals and tribal organizations that may have knowledge of cultural resources in or near the project. Rincon received a response via email on July 28, 2016 stating that the search of the SLF identified archaeological and tribal cultural resources in the vicinity of the project. The NAHC additionally provided a contact list of two Native American individuals and tribal organizations that may have knowledge of cultural resources in or near the project. Rincon mailed letters to the individuals provided by the NAHC, requesting information on cultural resources in the project site. As of December 2, 2016, no responses have been received

4.3.2.2 Paleontological Resources

Paleontological resources (fossils) are the remains and/or traces of prehistoric life. Fossils are typically preserved in layered sedimentary rocks and the distribution of fossils is a result of the sedimentary history of the geologic units within which they occur. Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on multiple factors. Although it is not possible to determine whether a fossil will occur within any specific location, it is possible to evaluate the potential for geologic units to contain scientifically significant paleontological resources, and therefore evaluate the potential for impacts to those resources, and provide mitigation for paleontological resources if they do occur during construction.

The project site is in northern Marin County, within the Coast Range geomorphic province (California Geological Survey 2002). As discussed above, two geologic units are mapped within the project site: Pleistocene older alluvium (Qoa; high) and Cretaceous to Jurassic mélange (resistant rock fragments in a shale-sand mixture) (KJfr; low) (Rice et al. 2002) (see Figure 8). The Cretaceous to Jurassic mélange represents marine deposits accumulated during collision of the Pacific and North American Plates during the Cretaceous (>66 million years ago). The Pleistocene older alluvium represents terrestrial stream-laid deposits of undivided gravel, sand, and silt deposited before the end of the last Ice Age (ca. 11,700 years ago). The Cretaceous to Jurassic mélange has some potential to yield fossils, but it is generally not considered fossiliferous. However, Pleistocene-aged alluvium has a record of abundant and diverse vertebrate fauna throughout California, including northern California (Agenbroad 2003; Bell et al. 2004; Jefferson 1988, 1991; Maguire and Holroyd 2016; Merriam 1911; Reynolds et al. 1991; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2009; Wilkerson et al. 2011; Winters 1954) and is generally considered to have high paleontological sensitivity wherever it occurs. Table 16~~15~~ summarizes geologic units mapped within the project site and their paleontological sensitivity.

Table 16~~15~~ Geologic Units within the Project Site

Geologic Unit*	Age	Notes	Paleontological Sensitivity (SVP)
Pleistocene alluvium (Qoa)	Pleistocene	Potential to contain significant paleontological resources	High
Franciscan mélange (KJfr)	Cretaceous to Jurassic	Potential to contain significant paleontological resources	Low

* Source: Rice et al. (2002)

4.3.3 Impact Analysis

Methodology and Significance Thresholds

Cultural Resources

Under CEQA, archaeological resources may meet the definition of a historical resource or unique archaeological resource. Any project that may cause a substantial adverse change in the significance of a historical resource would also have a significant effect on the environment. According to Appendix G of the State CEQA Guidelines, impacts related to cultural resources from the proposed project would be significant if the project would:

1) *Cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5;*

Figure 8 Paleontological Sensitivity of the Project Site

Imagery provided by National Geographic, ESRI and its licensors © 2016.
Additional Data Provided by Rice et al., 2002.

2) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;*

3) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature of paleontological or cultural value;*

4) *Disturb any human remains, including those interred outside of dedicated cemeteries.*

As discussed in the Initial Study (Appendix A), the proposed project would not affect any historic resources. As such, impacts related to threshold 1 would be less than significant and this issue is not analyzed in this EIR. The significance of a cultural resource and subsequently the significance of any impact is determined by among other things, consideration of whether or not that resource can increase our knowledge of the past. The determining factors are site content and degree of preservation. A finding of archaeological significance follows the criteria established in the State CEQA Guidelines.

CEQA Guidelines Section 15064.5 (Determining the Significance of Impacts to Archaeological Resources) states:

> *(3) […] Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code, § 5024.1, Title 14 CCR, Section 4852).*
>
> *(4) The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1(j) or 5024.1.*
>
> *(b) A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.*

Historical resources are "significantly" affected if there is demolition, destruction, relocation, or alteration of the resource or its surroundings. Generally, impacts to historical resources can be mitigated to below a level of significance by following the Secretary of the Interior's Guidelines for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Guidelines § 15064.6(b)]. In some circumstances, documentation of an historical resource by way of historic narrative photographs or architectural drawings will not mitigate the impact of demolition below the level of significance [Guidelines § 15126.4(b)(3)]. Preservation in place is the preferred form of mitigation for archaeological resources as it retains the relationship between artifact and context, and may avoid conflicts with groups associated with the site [Guidelines § 15126.4 (b)(3)(A)]. If an archaeological resource does not meet either the historic resource or the more specific "unique archaeological resource" definition, impacts do not need to be mitigated [Guidelines § 15064.5(e)]. Where the significance of a site is unknown, it is presumed to be significant for the purpose of the EIR investigation.

Tribal Cultural Resources

In accordance with the requirements of Assembly Bill 52 and the proposed draft updates to Appendix G of the State CEQA Guidelines, an impact to Tribal Cultural Resources from the proposed project would be significant if the project would:

1) *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural*

landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Paleontological Resources

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits (formations) within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Such impacts have the potential to be significant and, under the California Environmental Quality Act (CEQA) guidelines, may require mitigation. Sensitivity is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

The discovery of a vertebrate fossil locality is of greater significance than that of an invertebrate fossil locality, especially if it contains a microvertebrate assemblage. The recognition of new vertebrate fossil locations could provide important information on the geographical range of the taxa, their radiometric age, evolutionary characteristics, depositional environment, and other important scientific research questions. Vertebrate fossils are almost always significant because they occur more rarely than invertebrates or plants. Thus, geological rock units having the potential to contain vertebrate fossils are considered the most sensitive.

The Society of Vertebrate Paleontology (SVP) outlines in their Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010) guidelines for categorizing paleontological sensitivity of geologic units within a project area. The SVP (2010) describes sedimentary rock units as having a high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrate or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. Significant paleontological resources are fossils or assemblages of fossils, which are unique, unusual, rare, uncommon, diagnostically or stratigraphically important, and those which add to an existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally. While these standards were specifically written to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines. Rincon has evaluated the paleontological sensitivity of the Plan Area according to the following SVP (2010) categories; the results are summarized in Table 16~~15~~ and Figure 8.

HIGH POTENTIAL (SENSITIVITY)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate,

invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

LOW POTENTIAL (SENSITIVITY)

Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and would require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

UNDETERMINED POTENTIAL (SENSITIVITY)

Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

NO POTENTIAL

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

In general terms, for geologic units with high sensitivity, full-time monitoring typically is recommended during any project-related ground disturbance. For geologic units with low sensitivity, protection or salvage efforts typically are not required. For geologic units with undetermined sensitivity, field surveys by a qualified paleontologist are usually recommended to specifically determine the paleontological potential of the rock units present within the study area. For geologic units with no sensitivity, a paleontological monitor is not required.

Project Impacts and Mitigation Measures

THRESHOLD 2: WOULD THE PROJECT *CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF AN ARCHAEOLOGICAL RESOURCE PURSUANT TO SECTION 15064.5?*

IMPACT CR-1 CONSTRUCTION OF THE PROPOSED PROJECT WOULD INVOLVE SURFACE EXCAVATION, WHICH HAS THE POTENTIAL TO UNEARTH OR ADVERSELY IMPACT PREVIOUSLY UNIDENTIFIED ARCHAEOLOGICAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

The records search results, SLF search, and field survey did not identify any known cultural resources, including historic or archaeological resources, in the project site. Most of the project site is developed and has been previously graded. However, numerous previously recorded prehistoric resources, including three that yielded human remains, are in the vicinity. In addition, the project site is located approximately 1,600 feet from Novato Creek and in an area that likely supported native vegetation which in turn would have supported wildlife. The proximity to fresh water combined with the likely presence of

valuable resources indicates the project area was suitable for prehistoric habitation, resource gathering, and hunting. Thus the project site is considered sensitive for buried cultural resources.

Project construction activities within the project site include excavation of trenches for conduits measuring 3 feet in depth and excavation for pole foundations measuring 10 feet in depth. The area has been previously graded but the depth of previous disturbance is unknown, and intact cultural deposits may be located at shallow depths. Pre-construction reconnaissance can only confidently assess the potential for encountering surficial archaeological materials. Because the area is sensitive for buried archaeological deposits, including human remains, previously unidentified cultural resources may be encountered during project implementation and thus the project could impact previously unidentified archaeological resources. If the resource(s) were found to be significant, impacts would be potentially significant unless mitigation is incorporated. Potentially significant impacts would occur if the implementation of the proposed project would result in construction activities that would damage previously unidentified significant archaeological resources.

Mitigation Measures

MM CR-1a *Retain a Qualified Principal Investigator*

A qualified principal investigator, defined as an archaeologist who meets the Secretary of the Interior's Standards for professional archaeology, shall be retained to perform all mitigation measures related to archaeological and historical resources (hereafter principal investigator).

MM CR-1b *Worker Environmental Training Program*

At the project kickoff and before construction activities begin, the principal investigator or his/her designee will provide training to construction personnel on information regarding regulatory requirements for the protection of cultural resources. As part of this training, construction personnel will be briefed on proper procedures to follow should unanticipated cultural resources discoveries be made during construction. Workers will be provided contact information and protocols to follow in the event that inadvertent discoveries are made. If necessary, the project archaeologist can create training materials that can be shown to new workers and contractors to provide continuous training throughout the life of the project.

MM CR-1c *Unanticipated Discovery of Archaeological Resources*

If unanticipated cultural deposits are encountered during any phase of project construction or land modification activities, work shall stop and Novato Unified School District (NUSD) shall be notified. The principal investigator shall assess the nature, extent, and potential significance of any cultural remains. If the resources are determined to be Native American in origin, the principal investigator will consult with NUSD to begin Native American consultation procedures, as appropriate. If the discovery is determined to be not significant, work will be permitted to continue in the area. Potentially significant resources may require a Phase II subsurface testing program to determine the resource boundaries within the project site, assess the integrity of the resource, and evaluate the site's significance through a study of its features and artifacts. If, in consultation with NUSD, a discovery is determined to be significant, a mitigation plan should be prepared and implemented in accordance with state guidelines. If the resource cannot be avoided, a data recovery plan should be developed to ensure collection of sufficient information to address archaeological and historical research questions, with results presented in a technical report describing field methods, materials collected, and conclusions. Any cultural material collected as part of an assessment or data recovery effort should be curated at a qualified facility.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measures CR-1a through CR-1c would reduce potential impacts to archaeological resources to less than significant.

THRESHOLD 2: WOULD THE PROJECT DIRECTLY OR INDIRECTLY DESTROY A UNIQUE PALEONTOLOGICAL RESOURCE OR SITE OR UNIQUE GEOLOGIC FEATURE OF PALEONTOLOGICAL OR CULTURAL VALUE?

IMPACT CR-2 CONSTRUCTION OF THE PROPOSED PROJECT WOULD INVOLVE SURFACE EXCAVATION. ALTHOUGH UNLIKELY, THESE ACTIVITIES HAVE THE POTENTIAL TO UNEARTH AND/OR IMPACT PALEONTOLOGICAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Although unlikely because of the relative low probability of encountering fossils, subsurface excavation activities could unearth and/or impact potentially significant paleontological resources. Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits (formations) within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Sensitivity is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit.

Pleistocene-aged deposits within the project site have the potential to yield scientifically significant fossils (Figure 4.4-2). The University of California Museum of Paleontology (UCMP) collections database includes 24 Pleistocene records within Marin County, six of which produced terrestrial vertebrates including mammoth, mastodon, bison, horse, deer, and ground sloth. Pleistocene-aged alluvium has a record of abundant and diverse vertebrate fauna throughout California, including northern California (Agenbroad 2003; Bell et al. 2004; Jefferson 1988, 1991; Maguire and Holroyd 2016; Merriam 1911; Reynolds et al. 1991; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2009; Wilkerson et al. 2011; Winters 1954) and is generally considered to have high paleontological sensitivity wherever it occurs. Although only a small portion of the project area is mapped as highly sensitive for paleontological resources, it is possible that significant paleontological resources may be encountered during excavation in these areas. In addition, the mapped boundaries of these formations are approximate, and it is possible that a larger portion of the project site is sensitive for paleontological resources.

Project construction activities within the project site include excavation of trenches for conduits measuring 3 feet in depth and excavation for pole foundations measuring 10 feet in depth. The site has been previously graded but the depth of disturbance is unknown, and intact paleontological deposits may occur above a depth of 10 feet. If paleontological resources are identified during construction, impacts would be *potentially significant unless mitigation is incorporated*.

MITIGATION MEASURES

MM CR-2A *RETAIN A PROJECT PALEONTOLOGIST*

Prior to initial ground disturbance, ~~the applicant~~ NUSD shall retain a project paleontologist, defined as a paleontologist who meets the SVP standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources. A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year.

MM CR-2B *Worker Environmental Training Program*

Prior to the start of construction, the project paleontologist or his or her designee, shall conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The worker training shall be fulfilled at the time of a preconstruction meeting at which a qualified paleontologist shall attend. In the event of a fossil discovery by construction personnel, all work in the immediate vicinity of the find shall cease and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources.

MM CR-2C *Unanticipated Discovery of Paleontological Resources*

If unanticipated paleontological resources are discovered during any phase of project construction or land modification activities, work shall stop and NUSD shall be notified. The find shall be recovered under the supervision of the project paleontologist. Typically fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. Once salvaged, significant fossils should be identified to the lowest possible taxonomic level, prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the University of California Museum of Paleontology), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the project paleontologist.

Significance After Mitigation

Mitigation Measures CR-2a through CR-2c would reduce potential impacts to paleontological resources to *less than significant with mitigation incorporated*.

Threshold 3: Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Impact CR-3 Construction of the proposed project would involve excavation, which has the potential to unearth or adversely impact previously unidentified Human Remains. Impacts would be less than significant with mitigation incorporated.

Though not anticipated, project construction activities within the project site, including ground clearing, grading and excavation, have the potential to impact previously unidentified human remains. If human remains are identified in the project site, impacts would be *potentially significant unless mitigation is incorporated*.

Mitigation Measures

MM CR-3 *Unanticipated Discovery of Human Remains*

If human remains are discovered, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the county coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner will notify the NAHC. The NAHC will determine and notify a MLD. The MLD will complete the inspection of the site within 48 hours of notification and may recommend

scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure CR-3 would reduce potential impacts to human remains to *less than significant with mitigation incorporated.*

THRESHOLD 4: WOULD THE PROJECT CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE SECTION 21074 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS:

a) **LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K), OR**

b) **A RESOURCE DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE SECTION 5024.1. IN APPLYING THE CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCE CODE SECTION 5024.1, THE LEAD AGENCY SHALL CONSIDER THE SIGNIFICANCE OF THE RESOURCE TO A CALIFORNIA NATIVE AMERICAN TRIBE.**

IMPACT CR-4 CONSTRUCTION OF THE PROPOSED PROJECT WOULD INVOLVE SUBSURFACE EXCAVATION, WHICH HAS THE POTENTIAL TO IMPACT PREVIOUSLY UNIDENTIFIED TRIBAL CULTURAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Tribal cultural resources listed on or eligible for listing on the *California Register of Historical Resources (*CRHR*)* or a local register or significant tribal cultural resources were identified in the vicinity of the project site. However, the NAHC could not specify whether tribal cultural resources are known to exist on the project site. No tribal cultural resources were identified in the project site as a result of the CHRIS records search, field survey, or Native American outreach. However, ground disturbing activities have the potential to uncover previously unknown buried archaeological resources; if unanticipated archaeological resources are identified during construction and are determined to be tribal cultural resources, impacts would be *potentially significant unless mitigation is incorporated*.

MM CR-4 *UNANTICIPATED DISCOVERY OF TRIBAL CULTURAL RESOURCES*

In the event that a previously unidentified cultural resource is determined to be of Native American origin, the principal investigator will consult with NUSD to begin or continue Native American consultation procedures. If, in consultation with NUSD, a discovery is determined to be a tribal cultural resource and thus significant under CEQA, a mitigation plan should be prepared and implemented in accordance with state guidelines and in consultation with Native American groups. If the resource cannot be avoided, a mitigation plan should be developed to address tribal concerns.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure CR-4 would reduce potential impacts to tribal cultural resources to *less than significant level with mitigation incorporated*.

Cumulative Impacts

Cumulative development projects listed in ~~Table 5~~Table 6 involve ground-disturbing activities that could affect cultural, paleontological, or tribal resources or human remains. However, existing City of Novato policies and County and state regulations would protect cultural and tribal resources on a case-by-case basis as projects are considered. The implementation of mitigation measures CR-1 through CR-4 would reduce the proposed project's impacts on cultural (e.g., prehistoric sites, human remains), paleontological (i.e., fossils), and tribal cultural resources to less than significant. Therefore, the proposed project would not result in a cumulatively considerable contribution to a significant cumulative impact relative to cultural resources.

4.4 Greenhouse Gas Emissions

This section discusses the project's potential impacts related to emissions of greenhouse gases (GHG) and climate change. Traffic projections used in emissions estimates are based on the Transportation Impact Study Draft Report prepared by DKS dated October 10, 2016. The traffic study is included as Appendix F to this EIR.

4.4.1 Setting

Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC, 2013).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Observations of CO_2 concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in CH_4 and N_2O concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one. By contrast, CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than CO_2 on a molecule per molecule basis (IPCC, 2007).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. The following discusses the primary GHGs of concern.

Carbon Dioxide. The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (United States Environmental Protection Agency [USEPA], 2014). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the second half of the 20th century. Concentrations of CO_2 in the atmosphere have risen approximately 40 percent since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 ppm to 391 ppm in 2011 (IPCC, 2007; Oceanic and Atmospheric Administration [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 74 percent of total GHG emissions (IPCC, 2007). The largest source of CO_2 emissions, and of overall GHG emissions, is fossil fuel combustion.

Methane. CH_4 is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a GWP approximately 25 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148 percent (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (USEPA, 2014).

Nitrous Oxide. Concentrations of N_2O began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2010). N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. The GWP of nitrous oxide is approximately 298 times that of CO_2 (IPCC, 2007).

Fluorinated Gases (HFCS, PFCS, and SF_6). Fluorinated gases, such as HFCs, PFCs, and SF_6, are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

Greenhouse Gas Emissions Inventory

Total U.S. GHG emissions were 6,870.5 MMT CO_2e in 2014 (USEPA, 2016). Total U.S. emissions have increased by 7.4 percent since 1990; emissions increased by 1.0 percent from 2013 to 2014 (USEPA, 2016). The increase from 2013 to 2014 was due to the relatively cool winter conditions, which led to an increase in fuels for the residential and commercial sectors for heating. Additionally, transportation

emissions increased as a result of a small increase in vehicle miles traveled (VMT) and fuel use across on-road transportation modes. There also was an increase in industrial production across multiple sectors resulting in slight increases in industrial sector emissions (USEPA, 2016). Since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent. In 2014, the industrial and transportation end-use sectors accounted for 29.2 percent and 26.4 percent of CO_2 emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.6 and 17.1 percent of CO_2 emissions, respectively (USEPA, 2015).

CARB California Greenhouse Gas Inventory for 2000-2014 (CARB, 2016), California produced 441.5 MMT CO_2e in 2014. The largest source of GHGs in California is transportation, contributing 37 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 24 percent of the state's GHG emissions (CARB, 2016). Electric power accounted for approximately 12 percent of the total emissions. California emissions are due in part to its large size and large population compared to other states. However, per capita emissions in California are lower than in many other states. A factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. CARB has projected that statewide unregulated GHG emissions for the year 2020 will be 509 MMT CO_2e (CARB,2016). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2013).

According to the CalEPA's 2010 Climate Action Team Biennial Report, potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA, 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality. Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC], 2009).

Water Supply. Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and

the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

Hydrology and Sea Level Rise. As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to The Impacts of Sea-Level Rise on the California Coast, prepared by the California Climate Change Center (CCCC) (CCCC, 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture. California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

Ecosystems and Wildlife. Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and

animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2006).

Regulatory Setting

International Regulations

The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced in 1992. The UNFCCC is an international environmental treaty with the objective of, "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm, in order to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (IPCC, 2007). The UNFCCC itself does not set limits on GHG emissions for individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCCC brought nations together again to draft the Kyoto Protocol (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2 percent below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, 2011).

In Durban (17th session of the Conference of the Parties in Durban, South Africa, 2011), governments decided to adopt a universal legal agreement on climate change. Work began on that task immediately under a new group called the Ad Hoc Working Group on the Durban Platform for Enhanced Action. Progress was also made regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted (UNFCCC, 2011; United Nations, 2011).

In December 2015, the 21st session of the Conference of the Parties (COP21) adopted the Paris Agreement. The deal requires all countries that ratify it to commit to cutting greenhouse gas emissions, with the goal of peaking greenhouse gas emissions "as soon as possible" (Worland, 2015). The agreement includes commitments to (1) achieve a balance between sources and sinks of greenhouse gases in the second half of this century; (2) to keep global temperature increase "well below" 2 degrees Celsius (C) or 3.6 degrees Fahrenheit (F) and to pursue efforts to limit it to 1.5 C; (3) to review progress every five years; and (4) to spend $100 billion a year in climate finance for developing countries by 2020 (UNFCCC, 2015). The agreement includes both legally binding measures, like reporting requirements, as well as voluntary or non-binding measures while, such as the setting of emissions targets for any individual country (Worland, 2015).

Federal Regulations

The United States Supreme Court in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120) held that the USEPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-

duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the USEPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons CO_2e per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the USEPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The USEPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the USEPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the USEPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons CO_2e per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons CO_2e per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons CO_2e per year.

On July 3, 2012, the USEPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

California Regulations

California Air Resources Board (CARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, the Governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (2006 CAT Report) (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction

of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015 Governor Brown issued EO B-30-15, calling for a new target of 40% below 1990 levels by 2030.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years. Implementation activities are ongoing and CARB is currently the process of updating the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, 2014).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

CARB Resolution 07-54 establishes 25,000 metric ton (MT) of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, CARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission were assigned targets of a seven percent per capita reduction by 2020 and a 15 percent reduction per capita reduction by 2035.

In April 2011, the Governor signed SB 2X requiring California to generate 33 percent of its electricity from renewable energy by 2020.

On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, which requires the State to further reduce GHGs to 40 percent below 1990 levels by 2030. SB 32 is an extension of AB 32. SB 32 extends AB 32, directing ARB to ensure that GHGs are reduced to 40 percent below the 1990 level by

2030. The other provisions of AB 32 remain unchanged. The proposed stadium light project would be in operation before the SB 32 horizon. CARB is currently working to update the Scoping Plan to provide a framework for achieving the 2030 target. The updated Scoping Plan is expected to be completed and adopted by CARB in 2016 (CARB 2015).

CARB has also launched the "Cap-and-Trade" program, which was adopted on October 20, 2011 and uses a market-based mechanism to lower GHG emissions. In September 2013, CARB issued their first carbon offset credits as part of the program (CARB, 2014b). A carbon offset is a credit for greenhouse gas reductions achieved by an activity outside the capped sectors of industrial, transportation fuels and natural gas, and electric power (Climate Policy Initiative website, accessed March 2016). Under the California Cap and Trade Program, each compliance offset credit is equal to 1 MT of CO_2e.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

California Environmental Quality Act. Pursuant to the requirements of SB 97, the Natural Resources Agency has adopted amendments to the CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. As noted previously, the adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

In June 2010, the BAAQMD adopted thresholds of significance for GHG emissions (California Environmental Quality Act Air Quality Guidelines, June 2010). The plan-level thresholds for GHG emissions were in compliance with a "qualified GHG reduction strategy" or 6.6 MT CO_2e/service population/year for General Plans and 4.6 MT CO_2e/service population/year for Specific Plans. According to the Guidelines, a qualified GHG reduction strategy is one that includes the following elements:

1 Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
2 Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
3 Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
4 Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
5 Monitor the plan's progress
6 Adopt the GHG Reduction Strategy in a public process following environmental review.

As mentioned in Section 4.2, *Air Quality*, on March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds contained in the BAAQMD's 2010 Updated CEQA Guidelines. The BAAQMD was ordered to set aside the thresholds and is no longer recommending that these thresholds be used as a general measure of a project's significant air quality impacts. In May 2012, the BAAQMD updated the May 2011 CEQA Guidelines to remove all references to the June 2010 adopted thresholds. In August 2013, the First District Court of Appeal overturned the trial court and held that the thresholds of significance adopted by the BAAQMD were not subject to CEQA review. The California Supreme Court has agreed to hear an appeal of this case. The case is currently being briefed and the matter is still pending. As noted above, although the Court of Appeal ruling with respect to the CEQA Thresholds Guidelines has been appealed and the Supreme Court has granted the petition for review, the District has decided that it will use the methodological approach and numeric thresholds in BAAQMD CEQA Thresholds Guidelines to determine

whether the impacts of the project exceed the thresholds identified in Appendix G of the State CEQA Guidelines.

Local Regulations

In 2005, the BAAQMD initiated a Climate Protection Program. On June 1, 2005 the Air District Board of Directors adopted a resolution establishing a Climate Protection Program and acknowledging the link between climate protection and programs to reduce air pollution in the Bay Area. On April 2, 2014, the Board of Directors of the BAAQMD voted to approve the 10-Point Climate Action Work Program which includes policy approaches and a technical program focused on reducing GHG emissions.

In January of 2009, the City of Novato adopted the Climate Change Action Plan (CCAP). The CCAP was updated in 2015 to establish an updated baseline based on the GHG Inventory completed by the Marin Climate & Energy Partnership (MCEP) in 2013 due to refinements in available data, emission factors, and calculation methodologies. As part of development of the CCAP, the City also identified subsequent General Plan amendments to integrate new strategies into the City's planning framework. The plan outlines strategies to achieve a greenhouse gas reduction target of 15% below 2005 emission levels by the year 2020, consistent with the State's direction to local governments. The 2009 CCAP also suggests a 2035 goal of 40% below 2005 levels to achieve the 80% statewide reduction by 2050 called for in Executive Order S-3-05. The CCAP includes GHG reduction goals, measures, and actions in the areas of energy efficiency and conservation, water and wastewater, green building, waste reduction and recycling, climate-friendly purchasing, renewable energy and low-carbon fuels, efficient transportation, land use and community design, storing and offsetting carbon emission, and promoting community and individual actions. Together, these enable the City to achieve its climate protection goals.

4.4.2 Impact Analysis

Methodology and Significance Thresholds

Based on Appendix G of the State CEQA Guidelines, impacts related to GHG emissions from the project would be significant if the project would:

1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (State CEQA Guidelines §15355).

As discussed in Section 4.2.1(e), Regulatory Setting, the City of Novato adopted a CCAP. Because the CCAP underwent environmental review under CEQA, is intended to reduce the City's impact on climate change, and is consistent with BAAQMD qualification standards described in their June 2010 CEQA Guidelines, projects that are consistent with the CCAP would not have a significant climate change impact. Therefore, the project's contribution to cumulative impacts related to GHG emissions and climate change would be cumulatively considerable if the project would conflict with the CCAP.

Study Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Emissions of all GHGs are converted into their equivalent weight in CO_2 (CO_2e).

Construction Emissions

The BAAQMD has not established a threshold of significance for construction-related GHG emissions. Nevertheless, air districts such as the SLOACPD (2012) have recommended amortizing construction-related emissions over a 25-year period for commercial projects and a 50-year period for residential projects in conjunction with the project's operational emissions. In order to estimate the annual emissions that would result from construction activity associated with the project, GHGs from construction projects are quantified and amortized over a 25-year period. The amortized construction emissions are added to the annual average operational emissions and then compared to the applicable operational threshold. Construction activities are assumed to begin in July of 2017 and to occur over approximately 3 months, as outlined in the Initial Study (Appendix A). Emissions associated with the construction period were estimated using the CalEEMod software model, based on the projected maximum amount of equipment that would be used on-site at one time. Complete GHG CalEEMod results and assumptions can be viewed in Appendix D.

On-Site Operational Emissions

Operational emissions from electricity used by the project were calculated manually, by multiplying the estimated total kilowatt hours (kWh) of electricity used by the stadium times the maximum hours the lights would be on annually, multiplied by the Marin County Energy (MCE) 2013 average emission factor for CO_2e. Emissions from waste, water, and wastewater would not be generated by the stadium lighting project.

Direct Emissions from Mobile Combustion

Mobile emissions were calculated using the Emission Factors (EMFAC) model developed by the CARB and vehicle miles traveled (VMT) calculated based on the average distance to the campus from the SMHS boundary for home-visitors (approximately 1.75 miles) and the average distance to competing schools for away-visitors (approximately 15 miles), multiplied by the total peak hour trips based on trip generation estimates provided in the *Transportation Impact Study Draft Report*, prepared by DKS (see Section 4.6, Transportation/Traffic and Appendix F). An 80/20 split was used to calculate the attendance for home/away vehicles. For home games and local community events, the approximate distance to the average residential dwelling unit in the campus boundary area (approximately 1.75 miles) was used for calculations, and for away visitors, a conservative average of 15 miles was used to estimate the approximate distance to the average competing schools.

Project Impacts and Mitigation Measures

THRESHOLD 1: WOULD THE PROJECT GENERATE GREENHOUSE GAS EMISSIONS, EITHER DIRECTLY OR INDIRECTLY, THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT?

THRESHOLD 2: WOULD THE PROJECT CONFLICT WITH AN APPLICABLE PLAN, POLICY OR REGULATION ADOPTED FOR THE PURPOSE OF REDUCING THE EMISSIONS OF GREENHOUSE GASES?

IMPACT GHG-1 THE PROJECT WOULD GENERATE GHG EMISSIONS DURING CONSTRUCTION AND LONG-TERM OPERATION. PROJECT-GENERATED EMISSIONS WOULD NOT HINDER OR DELAY ACHIEVEMENT OF STATE GHG REDUCTION TARGETS ESTABLISHED BY AB 32 AND THE PROJECT WOULD BE CONSISTENT WITH THE CITY'S CLIMATE CHANGE ACTION PLAN. THEREFORE, THE PROJECT'S IMPACT TO CLIMATE CHANGE WOULD BE LESS THAN SIGNIFICANT.

As discussed above in Section 4.4.2(a), GHG emissions for the project were estimated using EMFAC, CalEEMod, and manually (see Appendix D for detailed GHG emissions calculations worksheets).

Construction Emissions

Construction of the stadium lighting project would generate temporary GHG emissions primarily due to the operation of construction equipment and truck trips. As shown in Table17~~Table 16~~, construction of the lighting project would generate an estimated 11 MT of CO_2e. Amortized over a 25-year period, construction of the stadium lighting project would generate less than 1 MT of CO_2e per year.

Table 17~~16~~ Estimated Construction Emissions of Greenhouse Gases

Emission Source	Annual Emissions
Construction of project	10.8 MT CO_2e
Amortized over 25 years	**0.4 MT CO_2e/year**

See Appendix D for calculations and for GHG emission factor assumptions.

Operational Indirect and Stationary Direct Emissions

For the purpose of this analysis, long-term emissions relate to electricity use and transportation. Both of these sources are discussed below.

Energy Use. Operation of the stadium lighting would consume electricity. The generation of electricity through combustion of fossil fuels emits CO_2, and to a smaller extent, N_2O and CH_4. Electricity consumption associated with the project would generate approximately 5 MT of CO_2e per year, as shown in Table 17~~Table 18~~.

Transportation Emissions. The combined project would result in approximately 77,559 annual VMT, based on the average distance to the campus from the SMHS boundary for home-visitors (approximately 1.75 miles) and the average distance to competing schools for away-visitors (approximately 15 miles). This estimate represents a conservative figure because many of the events would occur regardless of the stadium lighting at an alternative location or time, and the vehicle miles traveled would simply shift location or time. The project would generate a total of approximately 35 MT CO_2e associated with mobile emissions.

Combined Construction, Stationary, and Mobile Source Emissions. Table 18~~Table 17~~ combines the construction, operational, and mobile GHG emissions associated with development of the project. As shown in ~~Table 19~~Table 18, the combined annual emissions for the total project would be approximately 40 MT of CO_2e per year.

Table 18~~17~~ Combined Annual Emissions of Greenhouse Gases (2018)

Emission Source	Annual Emissions (Metric Tons CO_2e)
Project Construction	0.4
Project Operational	4.8
Project Mobile	35.1
Total Emissions from Project	**40.3**

Sources: See Appendix D for calculations and for GHG emission factor assumptions.

As discussed under "Methodology and Significance Thresholds," the City adopted a CCAP in 2009. The CCAP serves as a Qualified GHG Reduction Strategy consistent with State CEQA Guidelines and BAAQMD. It outlines a programmatic approach for evaluating whether a project would have a significant climate change impact by determining whether a project is consistent with the CCAP. A project that relies on the CCAP for its cumulative GHG emissions analysis should be consistent with ABAG population projections, support or include applicable GHG reduction actions, strategies, and measures, and should not interfere with implementation of CCAP goals or measures.

The project would not result in a population increase, and as such would be consistent with ABAG population projections. As demonstrated in ~~Table 18~~Table 19, the project is consistent with goals and measures from the City's CCAP. Only goals and measures from the CCAP that apply to the project were included in the table. As shown, the project would support and implement some strategies and measures contained in the CCAP. This impact would be less than significant.

Table 19~~18~~ Project Consistency with City of Novato Climate Change Action Plan

Global Warming Reduction Goals	Project Consistency
Renewable Energy Reduce emissions associated with energy generation through promotion and support of renewable energy generation and use.	**Consistent.** The stadium lights included in the project would use electricity provided by Marin Clean Energy, which has 20 megawatts of local, renewable energy projects online, under construction, or planned for construction.
Vehicle Efficiency and Alternative Fuels Reduce emissions from transportation sources by promoting use of alternative fuels and efficient use of traditional automobiles.	**Consistent**. Equipment used on-site would comply with all local ordinances and policies that aim to reduce emissions from heavy-duty construction equipment by limiting idling and utilizing cleaner fuels, equipment, and vehicles to exceed BAAQMD requirements.

MITIGATION MEASURES

Impacts would be less than significant without mitigation.

SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant without mitigation.

Cumulative Impacts

GHG emissions and climate change are by definition cumulative impacts, as they affect the accumulation of greenhouse gases in the atmosphere. As indicated above in Impact GHG-1 emissions associated with the project would be less than significant, and the project's impacts are therefore also cumulatively less than significant.

4.5 Noise

This section discusses the project's potential impacts to noise. Both temporary impacts related to construction and long-term impacts associated with the project are discussed. The analysis of on-site noise during athletic events is based on the *Assessment of Crowd and PA Noise Impact* report prepared by RGD Acoustics on November 22, 2016. The acoustical study is included as Appendix E to this EIR. Traffic projections used in noise estimates are based on the Transportation Impact Study Draft Report prepared by DKS dated October 10, 2016. The traffic study is included as Appendix F to this EIR.

4.5.1 Setting

Overview of Sound Measurement

Sound level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

The sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dB change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while those along arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations. Table 20 illustrates representative noise levels for the environment.

Table 2019 Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 1,000 feet	105	
	100	
Gas Lawnmower at 3 feet	95	
	90	
	85	Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	80	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime	75	
Gas Lawnmower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area	65	Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
	55	Large Business Office
Quiet Urban Area during Daytime	50	Dishwasher in Next Room
	45	
Quiet Urban Area during Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime	35	
	30	Library
Quiet Rural Area during Nighttime	25	Bedroom at Night, Concert Hall (background)
	20	
	15	Broadcast/Recording Studio
	10	
	5	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans, 1998: http://www.dot.ca.gov/hq/env/noise/pub/Technical%20Noise%20Supplement.pdf

Sound levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources such as industrial machinery. Sound from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Sound from heavily traveled roads typically attenuates at about 3 dB per doubling of distance.

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used sound metrics that considers both duration and sound power level is the equivalent noise level (L_{eq}). The L_{eq} is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average sound level). Typically, L_{eq} is summed over a one-hour period.

The actual time period in which sound occurs is also important since sound that occurs at night tends to be more disturbing than that which occurs during the daytime. Two commonly used sound metrics – the Day-Night average level (L_{dn}) and the Community Noise Equivalent Level (CNEL) - recognize this fact by weighting hourly L_{eq}s over a 24-hour period. The L_{dn} is a 24-hour average sound level that adds 10 dB to actual nighttime (10:00 PM to 7:00 AM) sound levels to account for the greater sensitivity to noise during

that time period. The CNEL is identical to the L_{dn}, except it also adds a 5 dB penalty for sound occurring during the evening (7:00 PM to 10:00 PM).

Existing Noise Conditions and Sources

The most common sources of noise in the City of Novato are transportation-related, such as automobiles, trucks, motorcycles, and airplanes (City of Novato 2014). Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level, and because of its proximity to areas sensitive to noise exposure. Ambient noise levels would be expected to be highest during the daytime and rush hour unless congestion slows speeds substantially. The primary roadways with motor vehicle noise near the project site are San Marin Drive and Novato Boulevard. The area around the project site is primarily residential, with the nearest residences are to the north and west along San Ramon Way and Aspen Drive and to the east along San Marin Drive. Noise from the school stadium consists of sporting events (e.g., football games, soccer games, track meets) as well as practices for various sports teams and special events such as graduation. The practices generate lower noise levels than games but tend to occur more frequently.

In order to quantify existing noise levels at adjacent noise sensitive land uses, long-term (LT) noise measurements were conducted at three locations and short-term (ST) measurements were conducted at seven locations. Long-term measurements are unattended and last more than 24 hours. Short-term measurements are attended and generally last 15 minutes. The measurement locations were chosen to represent the residential areas near the project site. Figure 9 shows the locations of the measurements.

Long-term Noise Measurements

The long-term noise monitoring period extended from Thursday, August 25, 2016 at 4:00 PM through Monday, August 29, 2016 at 4:00 PM. This monitoring period included typical daytime school activities, Saturday football games (varsity, junior varsity, and freshman/sophomore) as well as Sunday Pop Warner football games. Continuous audio recordings were made at the long-term measurement locations to help identify the various noise sources. The noise monitor at location LT-1 was on the chain link fence at the school property line adjacent to the homes on Santa Gabriella Court. Location LT-2 was on a street light pole in front of homes along San Marin Drive across from the stadium. Location LT-3 was on a tree near the property line between the baseball field and the homes on San Ramon Way. The long-term noise measurement results are charted in Figure 10, Figure 11, and Figure 12, and the CNEL for each full day is shown in Table 21.

Figure 9 Noise Measurement Locations

Figure 10 Long-term Hourly Noise Measurement Results at LT-1

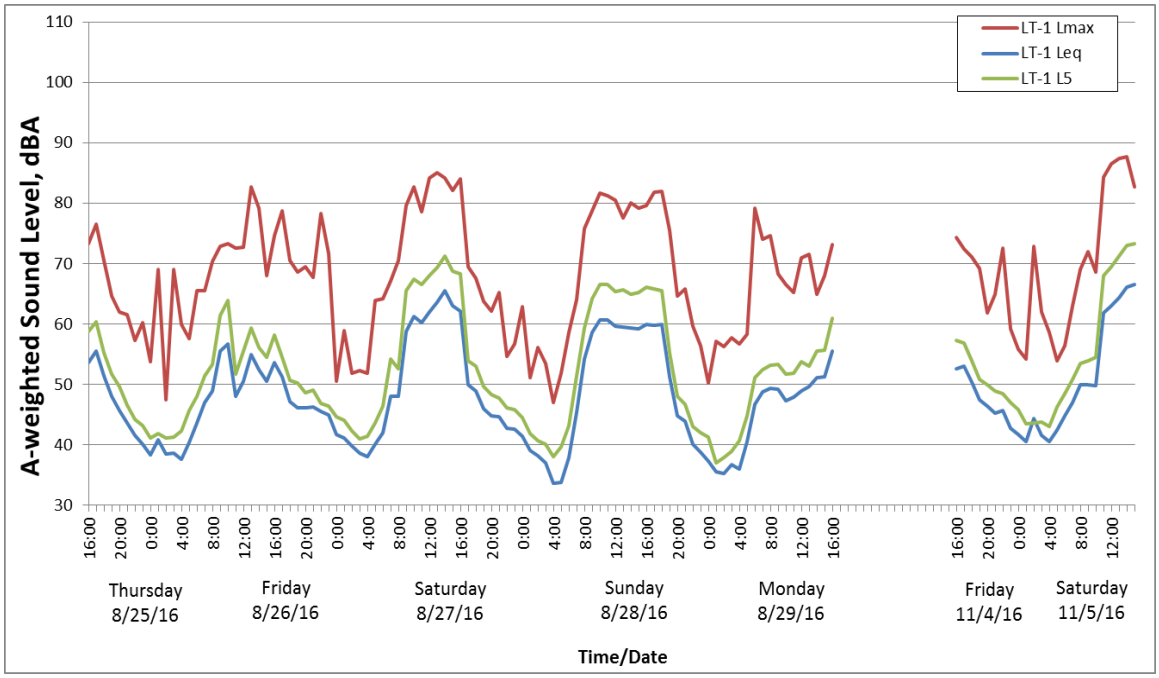


Figure 11 Long-term Hourly Noise Measurement Results at LT-2

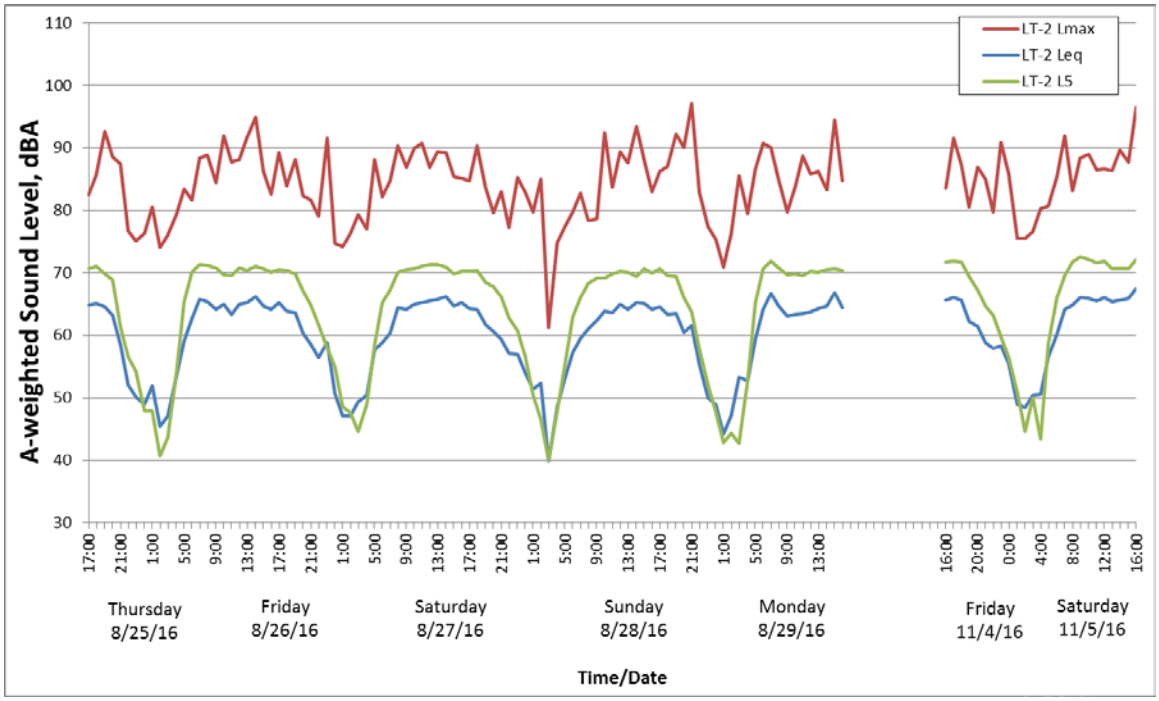


Figure 12 Long-term Hourly Noise Measurement Results at LT-3

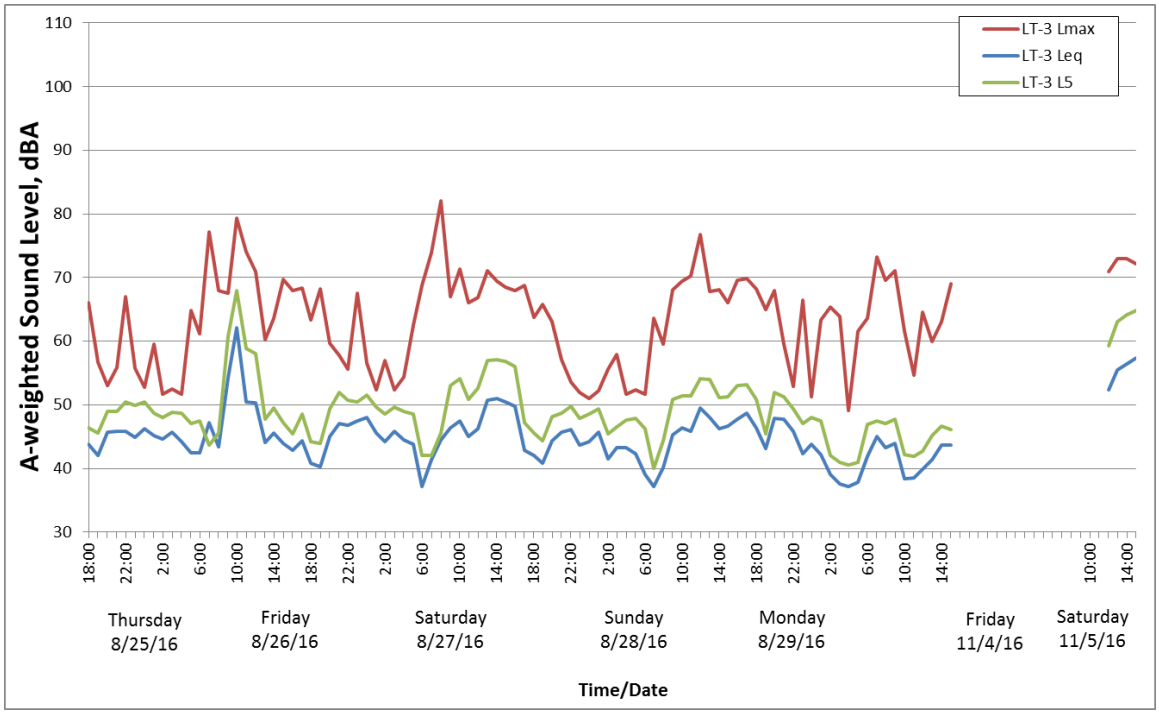


Table 21 Measured Noise Levels at Receiver Areas

	CNEL		
Receiver	Friday, Aug 26, 2016	Saturday, Aug 27, 2016	Sunday, Aug 28, 2016
LT-1	52	58	57
LT-2	66	65	64
LT-3	54	52	51

Short-term Noise Measurements

Short-term noise measurements were conducted during two Saturday varsity football games, and, at some locations on Monday afternoon to document noise levels without a football game. The short-term measurements were taken at locations that represent the residences near the stadium. The short-term measurements allow for direct observation of existing ambient noise sources to help quantify noise sources from the school with less influence from other ambient noise sources.

All short-term measurements except ST-6 were made five feet above ground, which is generally representative of human head level. Short-term measurement ST-6 was made at a height of 24 feet above ground to represent the elevation of the homes on San Ramon Way. Table 22 and Table 23 show the noise levels for Saturday and Monday, respectively.

On August 27th, 2016, short-term noise was measured at a varsity football game with an attendance of 594 people ~~at~~versus Kennedy High School. The game lasted from 2:00 PM to 5:00 PM. On November 5th, 2016, noise was measured at a varsity football game ~~at~~versus Novato High School with an observed attendance of 1,200 people. The game lasted from 2:00 PM to 4:00 PM.

Table 22 Short-Term Noise Measurement Results during Varsity Football Games

Site	Location	Time	L_{eq} (dBA)	L_5 (dBA)	L_{max} (dBA)/Sources
ST-1	Top of hill near homes north of stadium, approximately 22 feet from north property line	8/27/16 14:02 – 14:18	62	68	PA: 62 typ. Crowd: 70 typ. Whistles: 72 typ.
		11/5/16 13:58 – 14:18	63	70	PA: 67 – 74 Crowd: 72 typ. Whistles: 54-65
ST-2	Top of hill northeast of field, near the multi-family homes along Aspen Drive	8/27/16 14:22 – 14:39	56	61	PA: 57 – 62 Crowd: 57 – 64 Whistles: 61 typ.
		11/5/16 14:21 – 14:42	56	62	PA: 67 typ. Crowd: 54 – 66 Whistles: 68 – 73
ST-3	San Marin Drive	8/27/16 14:59 – 15:14	62	68	PA: 61 typ. Crowd: 65 typ. Whistles: 64 – 71 Car: 64 – 71
		11/5/16 14:59 – 15:14	61	66	PA: 57 – 64 Crowd: 60 – 70 Whistles: 61 typ. Car: 63 – 73

Site	Location	Time	L_{eq} (dBA)	L_5 (dBA)	L_{max} (dBA)/Sources
ST-4	San Felipe Way	8/27/16 14:57 – 15:18	51	55	PA: 49 – 56 Crowd: 47 – 61 Whistles: 45 – 52 Car: 51 – 70 Lawn Mower: 48 – 58
		11/5/16 14:23 – 14:28	50	55	PA: 52 – 62 Crowd: 52 – 62 Whistles: 48 – 54 Car: 69
ST-5	Santa Yorma Court	8/27/16 15:43 – 15:58	47	52	PA: 51 - 60 Crowd: 43 - 49 Whistles: 43 – 49 Car: 50 – 54 Plane: 44
		11/5/16 14:48 – 15:04	50	57	PA: 54 - 62 Crowd: 47 - 52 Whistles: 42 – 50 Car: 49 - 56
ST-6	North of baseball field near property line	8/27/16 16:15 – 16:28	53	58	PA: 55 – 62 Crowd: 48 - 69 Whistles: 55 typ.
		11/5/16 15:24 – 15:39	56	64	PA: 66 typ. Crowd: 65 typ. Whistles:56 typ.
ST-7	Santa Gabriella Court	8/27/16 15:46 – 16:01	47	52	PA: 49 - 52 Crowd: 47 - 54 Whistles: 45 – 51 Car: 55 - 60
		11/5/16 15:11 – 15:31	49	54	PA: 50 - 55 Crowd: 51 - 58 Whistles: 49 typ. Car: 51 - 57 Jet: 50

*CNEL calculated based on correlation between short-term measurement and long-term measurement

Notes; Typ = typically

Table 23 Short-Term Noise Measurement Results without Football Game

Site	Location	Time	L_{eq} (dBA)	L_5 (dBA)	L_{max} (dBA)/Sources
ST-4	San Felipe Way	14:51 – 15:06	56	61	Cars: 58 – 76
ST-5	Santa Yorma Court	15:41 – 15:55	42	46	Car: 44 – 55 Bird: 48 - 51 Motorcycle: 46 - 57
ST-7	Santa Gabriella Court	15:17 – 15:32	42	45	Car: 44 – 61 Bird: 38 – 40 Dog: 41

*CNEL calculated based on correlation between short-term measurement and long-term measurement

Sensitive Receptors near Project Site

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hospitals, schools, guest lodging, and libraries are most sensitive to noise intrusion and therefore have more stringent noise exposure targets than manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. The school itself is a sensitive receptor with the nearest classroom facilities approximately 100 feet southwest of the stadium track. In addition, the school is surrounded almost entirely by single-family residences. The nearest residence is located approximately 120 feet northeast of the edge of the stadium. The only adjacent non-residential land uses are a ranch, dental office, and church. The ranch and dental office are located south of the campus, across Novato Boulevard, and the church is located east of the campus, across San Marin Drive.

Regulatory Setting

State

Government Code Section 53094. This article of California's Government Code states that a school district is not required to comply with the zoning ordinances of a county or city unless the zoning ordinance makes provision for the location of public schools and unless the city or county has adopted a general plan. Furthermore, this article authorizes the governing board of a school district to render a local zoning ordinance inapplicable to a proposed use of property by the school district, by a vote of two-thirds of its members. The governing board may not take this action when the proposed use of the property is for non-classroom facilities, including, but not limited to, warehouses, administrative buildings, and automotive storage and repair buildings. Because the proposed project is considered an improvement to educational facilities at a public school, the governing board of the District adopted Resolution No. 16-2016/17 to exempt the proposed project from local zoning ordinance requirements pertaining to noise and other issues.

Local

City of San Novato General Plan. The City of Novato General Plan Safety and Noise Chapter provides noise and land use compatibility standards adapted from the State Office of Planning and Research. These standards are shown in Table 24 and are used to determine whether a proposed development or land use is located in an area requiring special noise mitigation measures. Residential land use and schools are considered "normally acceptable" when exposed to a CNEL of 60 dBA or less.

Table 24 City of Novato General Plan – Noise and Land Use Compatibility Standards

	Exterior Noise Exposure – L_{dN} or CNEL, dB		
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Unacceptable**
Residential, Hotels, and Motels	>60	60-75	75-85
Outdoor Sports and Recreation, and Neighborhood Parks and Playgrounds	>65	65-80	80-85
Schools, Libraries, Museums, Hospitals, Personal Care Facilities, Meeting Halls, and Churches	>60	60-75	75-85
Office Buildings, Business Commercial, and Professional	>70	70-80	80-85
Auditoriums, Concert Halls, and Amphitheaters	>70	70-85	70-85

A "normally acceptable" designation indicates that standard construction can occur with no special noise reduction requirements. Conventional construction, with closed windows and fresh air supply systems (e.g., air conditioning) normally suffices for the "conditionally acceptable" condition.

The following General Plan policies and programs are relevant to the potential impact of project-generated noise on the existing land uses in the study area.

- **SF Policy 38**: Mitigate noise exceeding standards and significant noise impacts to the maximum feasible extent.
- **SF Program 38.1**: Require acoustical studies and mitigation measures for new developments and transportation improvements which affect noise sensitive uses such as schools, hospitals, libraries, group care facilities, and convalescent homes.
- **SF Program 38.5**: Investigate mitigation measures for projects that would cause a substantial increase in noise (i.e., cause the L_{dn} to increase above 60 dBA or cause an increase of 5 dBA L_{dn} or more in the noise environment) in adjacent residential areas or in residential areas affected by traffic generated by the proposed project. (Draft EIR, pages 166 and 167, Impact 4.7A) In areas where noise is within standards, some increases are inevitable. This program is to keep those increases to the minimum necessary.

City of Novato – Noise Ordinance

The City of Novato Municipal Code Zoning Ordinance (Section 19.22.070) includes performance standards for allowable exterior noise levels. According to this section "uses, activities, and processes shall not generate or emit any noise or sound in excess of the levels provided in Table 3-5 beyond the property line of the parcel on which they are located." These maximum allowable noise levels are shown in Table 25. Construction activities between 7:00 AM and 6:00 PM on weekdays and between 10:00 AM and 5:00 PM on Saturday are exempted from these standards. Routine maintenance activities are also exempted.

Table 25 City of Novato Municipal Code Allowable Exterior Noise Levels

Type of Land Use	Time Interval	Maximum Noise Level[2]
Residential[3]	10:00 PM – 6:00 AM	45 dBA
	6:00 AM – 10:00 PM	60 dBA
Commercial[4]	10:00 PM – 6:00 AM	60 dBA
	6:00 AM – 10:00 PM	70 dBA
Industrial or Manufacturing[4]	Anytime	70 dBA

[1] Each of the noise limits specified in Table 3-5 shall be reduced by 5 dBA for impulse or simple tone noises. If the ambient noise exceeds the resulting standard, the ambient shall be the standard.

[2] Maximum noise levels shall not be exceeded for an aggregate period of more than three minutes within a one-hour time period or by more than 20 dBA at any time.

[3] Residential standards apply to sensitive receptors such as schools, hospitals, libraries, group care facilities, and convalescent homes. These uses may require special mitigation.

[4] Commercial standards apply to Mixed Use Districts.

Source: Municipal Code Table 3-5

4.5.2 Impact Analysis

Methodology and Significance Thresholds

Noise associated with implementation of the project would be generated by both activities at the project site and traffic to and from the project site. For the purposes of this analysis, noise impacts associated

with the proposed project would be significant if they would exceed the following thresholds of significance, which are based on Appendix G of the State CEQA Guidelines. According to Appendix G of the State CEQA Guidelines, a project would have a significant impact related to noise if it would result in:

1 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;
2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
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 expose people residing or working in the project area to excessive noise levels; or
6 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.

An Initial Study was prepared for the project (Appendix A). The Initial Study analyzed potentially significant impacts that might occur from implementation of the proposed project. Based on the analysis in the Initial Study, noise impacts related to groundborne vibration and public airports were found to be less than significant. The Initial Study also found no impacts related to private airstrips. Therefore, impacts related to criteria 2, 5, and 6 above are addressed in Appendix A and are not discussed further in this section. As detailed below, the CEQA thresholds listed above are further refined to provide reasonable quantitative thresholds for the evaluation of the significance of potential noise impacts; the methodology for assessing the significance of these noise sources is described below.

Construction Noise Impact Thresholds

In order to evaluate temporary construction noise impacts under CEQA Appendix G threshold 4 above, the relevant local construction noise thresholds are used for impact evaluation in this analysis. As discussed above in Regulatory Setting, the City of Novato establishes restrictions on construction hours, noise thresholds for ambient noise levels, and noise thresholds for noise produced by construction activity. However, as mentioned, the Municipal Code includes an exception for authorized construction activities, including warming-up or servicing of equipment, and any preparation for construction between 7 AM and 6 PM on weekdays, and between 10 AM and 5 PM on Saturdays. Therefore, the project would result in a significant impact if construction occurred outside of the approved time window or on Sundays or official federal national holidays, except as authorized by the Community Development Director.

Operational Noise Impact Thresholds

CEQA Appendix G does not provide quantitative noise level limits to use as thresholds of significance for a project. Instead, it points to use of local ordinances, adopted standards of agencies as well as the potential for a project to significantly increase existing noise levels above those that were present without the project. Within this framework, the following thresholds are applied for this project.

Threshold 1: A significant noise impact would occur if the combined noise from all field sources exceeds an L_5 of 55 dBA or L_{max} of 75 dBA at the adjacent uses.

For the purposes of assessing impact from the combined noise of all sources associated with activities at the field (e.g., crowd, PA, players and coaches) an hourly L_5 of 55 dBA and a L_{max} of 75 dBA are used as a threshold of significance. These thresholds are based on the Novato Municipal Code which specifies a

noise limit of 60 dBA for residential use. Since the field noise sources include impulsive sounds (bursts of noise from the crowd, PA system, and whistles), the noise limit is reduced by 5 dBA to 55 dBA. The descriptor L_5 is used to represent the sound level exceeded for 3 minutes in an hour (i.e., 5 percent of the time). The L_{max} descriptor is used to represent the sound level not exceeded at any time which is corresponds to the noise limit plus 20 dBA. (i.e., 75 dBA).

Threshold 2: A significant impact would occur when a varsity game is played at night (as compared to a day when a varsity game is played during the daytime) if the daily CNEL:

- Increases by more than 5 dBA and the future CNEL is less than 60 dBA, or
- Increases by more than 3 dBA and the future CNEL is 60 dBA or greater and less than 65 dBA, or
- Increases by more than 1.5 dBA and the future CNEL is 65 dBA or greater

For the purposes of assessing impact due an increase in noise from activities at the field, this report uses thresholds based on the 2015 FAA Order which has screening and impact thresholds for increases in aircraft noise. Although the FAA policies were developed for aircraft noise, they are generally consistent with the Novato General Plan policy regarding impact due to increased noise. Adoption of these thresholds provides a means for assessing increase in noise when the future noise exposure would exceed "normally acceptable" levels for residential land use.

The L_{dn} has an adjustment to account for people's increased sensitivity to noise at night (between 10:00 PM and 7:00 AM) but does not include an adjustment to account for the increased sensitivity of people to noise during evening hours when the games would occur. There is another metric called CNEL which is similar to the L_{dn} but includes a 5 dBA "penalty" which is added to noise during evening hours (7:00 PM – 10:00 PM) to account for peoples' sensitivity to evening noise.

In order to evaluate the potential impact that would occur as a result of a change from day games to night games, this report considers the increase in the CNEL on a day when a varsity football game is played at night as compared to the CNEL on a day when a varsity football game is played during the day. Football games are used since these are generally the loudest events at the high school stadium.

The use of CNEL increase on a varsity football game day is considered a fairly conservative metric since the varsity football games would only occur about seven times a year. In addition, the other games/activities on the field are quieter and would generate smaller increases.

Threshold 3: A significant impact would occur if the annual average CNEL:

- Increases by more than 5 dBA and the future CNEL is less than 60 dBA, or
- Increases by more than 3 dBA and the future CNEL is 60 dBA or greater and less than 65 dBA, or
- Increases by more than 1.5 dBA and the future CNEL is 65 dBA or greater

The CNEL increase on a varsity football game day is helpful to understand potential impact on a daily basis but it does not necessarily provide a measure of the impact over time since there would be events happening on the field throughout the year. In order to evaluate the potential impact of noise from all field related activities during the course of a year, this analysis considers the increase in the annual average CNEL that would result from soccer, lacrosse, and practices occurring on the field during evening hours with lights.

To determine the increase in the annual average CNEL from all field sources, an annual average CNEL from each field noise source was calculated for existing and future conditions based on Table 31. The total existing and future annual average field activity CNEL was then added to the ambient CNEL to determine a total CNEL for existing and future conditions.

Crowd and PA Noise Methodology

In order to evaluate the impact of the project on the community surrounding San Marin High School, the data acquired from the site noise measurements for sources such as football games and practices were used to determine future noise levels emanating from the field. The characteristics and assumptions used for calculating project related noise levels for each activity are discussed in the following sections. Calculations of field noise were made using the SoundPLAN (version 7.4) computer model. The model takes into account the various noise sources, attenuation due to distance and attenuation (and acoustical reflections) from terrain and buildings.

Football Games Methodology

The dominant noise sources during football games include the crowd cheering, coaches/player voices, referee whistles, and PA system. According to the project description attendance at typical varsity football games is currently about 400 spectators. Attendance at playoff games and certain rivalry games (Marin Catholic and Novato High) is approximately 1,400. With the project, typical varsity game attendance is expected to increase to up to ~~1,440~~1,000. Attendance at playoff and rivalry games is also expected to increase up to 1,440 with the project. The Noise Assessment (Appendix E) conservatively used an attendance projection of 1,440 for all varsity football games under the proposed project. Attendance at junior varsity football and freshman football games is ~~also~~ not expected to increase substantially. In order to account for the increase in attendance for varsity games, the SoundPlan model noise source inputs were adjusted at a rate of 3 dB per doubling of attendance.

School-Related Non-Football Games (e.g. Soccer, Lacrosse) Methodology

As discussed in the project description, non-football games such as soccer, lacrosse, and track would have lower attendance than varsity football. In order to account for the differences in attendance, the SoundPlan model noise source inputs were adjusted at the same rate as for football games. Usage of the PA is also limited to certain games and events with the project.

School Athletic Practices Methodology

The noise level from school athletic practices was obtained from the long-term measurements and a short-term measurement made near the field press box during a football practice. Practice noise is generally limited to the voices of coaches and players as well as the coaches' whistles. No difference is expected between the noise level of practices occurring during the daytime and those occurring during the evening with the project. The PA system would not be used during practices.

Community Usage Methodology

Community leagues (including adults) would not use the fields in the evening for athletic games or practices. Currently, the usage of PA at community events is limited to certain games and events. Future PA usage with the project would not change. The noise from community use of the field would include the voices of players, referee whistles, and in some occasions, PA. Highly attended community games such as the youth soccer event and youth football games are expected to generate more noise than others such as youth lacrosse practices and youth soccer games.

Traffic Noise Methodology

Noise levels associated with existing and future traffic along area roadways were calculated using standard noise modeling equations adapted from the Federal Highway Administration Traffic Noise Model (TNM) 2.5 (noise modeling data sheets can be viewed in Appendix E). The model calculations are based on peak hour traffic data from the Transportation Impact Study Draft Report prepared for the

project by DKS (see Appendix F). Six roadways in the vicinity of San Marin High School were modeled in TNM: San Marin Drive, Novato Boulevard, San Andreas Drive, Sutro Avenue, Wilson Avenue, and De Long Avenue. These roadways were determined to be representative of the greatest potential increase in traffic noise due to these roadways experiencing the greatest percentage increase in traffic volume during the pre- and post-game hour. These roadways include a mix of busy streets with high traffic volume (San Marin Drive and Novato Boulevard) and streets along quiet residential neighborhoods. The TNM model was used to model existing, existing plus project, future (2040), and future (2040) plus project conditions.

The Federal Transit Administration's (FTA's) May 2006 Transit Noise and Vibration Impact Assessment recommendations were used to determine whether or not increases in roadway noise would be considered significant. The allowable noise exposure increase changes with increasing noise exposure, such that lower ambient noise levels have a higher allowable noise exposure increase. These noise increase thresholds would apply to a frequent, long-term change in noise levels, such as that associated with increased daily commuter traffic.

Table 26~~Table 25~~ shows the significance thresholds for increases in traffic-related noise levels caused by the project. Although the District would not be subject to noise restrictions based on the thresholds defined below, these thresholds are used to determine the severity of potential traffic-related noise impacts under CEQA.

Table 26~~25~~ Significance of Changes in Operational Roadway Noise Exposure

Existing Noise Exposure	Allowable Increase in Noise Exposure (L_{dn} or L_{eq} in dBA)
45-50	7
50-55	5
55-60	3
60-65	2
65-75	1
75+	0

Source: Federal Transit Administration (FTA), May 2006.

If sensitive receptors would be exposed to permanent, consistent traffic noise increases exceeding the above criteria, impacts would be significant.

Field Usage Assumptions

In order to evaluate the annual average noise levels from each of the fields with and without the project, assumptions were made regarding the number and distribution of events with the project. ~~Table 26~~Table 27 summarizes the assumptions for field usage.

Table 2726 Field Use Assumptions

Field Usage	Timing	Number of Events per Year
High School Varsity/Junior-Varsity Football Games	Until 9:30 PM	~~8~~ 19
High School Freshman Football Games	Until 8:15~~30~~ PM	~~8~~ 6
High School Non-Football Games	Until 8:15~~00~~ PM	~~32~~ 61
Powder Puff Game	Until 9:30 PM	1
High School Practice	Varies but ends by 8:00 PM	~~313~~ 86
~~Community Usage~~ Novato Youth Football	~~Varies but ends by dusk~~ Until 6:00 PM	~~148~~ 6
High School Graduation	Until 9:00 PM	1

Note: Number of events is estimate based on the original project description, and actual number of events is likely less than the number of events outlined above, providing a conservative estimate of noise during field usage.

Project Impacts and Mitigation Measures

The following section describes potential impacts for based on a comparison of project-generated noise with adopted thresholds of significance. Where impacts are identified, feasible noise mitigation measures are provided. For ease of identification, any receptor exposed to a significant impact is identified in the following tables with "bold" numbers.

THRESHOLD 4: WOULD THE PROJECT RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT ABOVE LEVELS EXISTING WITHOUT THE PROJECT?

IMPACT N-1 NOISE GENERATED BY CONSTRUCTION OF THE PROJECT WOULD OCCUR WITHIN DAYTIME HOURS THAT ARE EXEMPTED FROM THE ALLOWABLE EXTERIOR NOISE STANDARDS IN THE CITY OF NOVATO MUNICIPAL CODE. THEREFORE, CONSTRUCTION NOISE WOULD NOT SUBSTANTIALLY AFFECT NEARBY SENSITIVE RECEPTORS, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Nearby noise-sensitive land uses generally include the classrooms associated with the school itself, single-family residences, and other schools near the project site. Classrooms are located approximately 100 feet from the stadium track and the closest residences are located approximately 120 feet from the stadium track. These sensitive receptors would be exposed to temporary construction noise during development of the project, including excavation, trenching, and pole installation.

Very little grading would be required for the proposed project. Ground disturbance would be limited to excavation for the lighting and speaker system pole foundations and trenching or boring for the electrical conduit installation. Construction equipment for pole foundation excavation, trenching, and boring would likely include a backhoe, an auger, and a drill rig. Noise levels from the use of construction equipment would be a function of the type of equipment and the distance to sensitive receptors. ~~Table 27~~Table 28 shows the typical noise levels that these pieces of equipment would generate at the nearest sensitive receptors to the project site.

Table 2827 Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 feet from Sound Source	Noise Level at 100 feet from Sound Source	Noise Level at Receptor 120 feet from Stadium
Augur Drill Rig	84	78	76.4
Backhoe	80	74	72.4
Excavator	81	75	73.4
Flatbed Truck	74	68	66.4

Distances extrapolated from a reference distance of 50 feet and noise levels calculated at distance to nearest sensitive receptor for noise attenuation

Source: FTA, 2006.

As indicated in Table 27Table 28, temporary construction activities would generate estimated noise levels of up to 78 dBA at the nearest classroom located 100 feet from the site and 76.7 dBA at the closest residential use located 120 feet to the northeast. Although sensitive receptors would be subject to temporary increases in noise from the use of construction equipment, construction activities would occur between the daytime hours of 7:00 AM and 6:00 PM on weekdays and between 10:00 AM and 5:00 PM on Saturday. Construction during these daytime hours is exempted from the City's allowable exterior noise levels as specified in the City of Novato Municipal Code Section 19.22.070. Therefore, construction of this project is exempt from the Municipal Code requirements and construction noise impacts would be less than significant.

THRESHOLD 1: WOULD THE PROJECT RESULT IN EXPOSURE OF PERSONS TO OR GENERATION OF NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN ANY APPLICABLE PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

THRESHOLD 3: WOULD THE PROJECT RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT ABOVE LEVELS EXISTING WITHOUT THE PROJECT?

IMPACT N-2 NOISE FROM CROWDS AND THE PROPOSED PA SYSTEM AT ATHLETIC EVENTS ON THE FIELD WOULD NOT EXCEED THE THRESHOLD OF 75 DBA AT THE SENSITIVE RECEPTORS; HOWEVER, VARSITY FOOTBALL GAME NOISE WOULD GENERATE L5 NOISE LEVELS THAT EXCEED THE THRESHOLD OF 55 DBA AT THE ADJACENT RESIDENCES. ALTHOUGH DESIGN REQUIREMENTS FOR THE PA SYSTEM WOULD REDUCE NOISE TO THE EXTENT FEASIBLE, THE NOISE IMPACT FROM PROJECT-RELATED ACTIVITIES ON THE FIELD WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Table 28Table 29 summarizes the L_5 and L_{max} noise level results of a varsity football game with after installation of the proposed lighting and PA systems at the sensitive receptor locations. Varsity football game noise would generate L_{max} noise levels that do not exceed the threshold of 75 dBA at the sensitive receptor. However, varsity football game noise would generate L_5 noise levels that exceed the threshold of 55 dBA at all of the receiver locations except ST-5 which is the farthest from the field (approximately 720 feet). This exceedance of the L_5 noise threshold would be a significant impact on sensitive receptors.

~~Table 29 compares the existing and future 24 hour CNEL on a football game day.~~

Table 29~~28~~ L5 and Lmax During to Varsity Football Game

Receiver*		Varsity Football Games	
		Hourly L_5 (dBA)	L_{max} (dBA)
ST-1	Top of Hill near homes north of field	**71**	73
ST-2	Near multi-family homes on Aspen Dr.	**65**	69
ST-3	San Marin Drive	**71**	73
ST-4	San Felipe Way	**60**	67
ST-5	Santa Yorma Court	54	57
ST-6	North of baseball field near property line	**62**	69
ST-7	Santa Gabriella Court	**56**	60

Source: RDG Acoustics, 2016

Table 30 shows the noise levels from other stadium activities for comparison with the Noise Ordinance limits. It is, however, important to note that while many of these activities will exceed the Noise Ordinance limit, they are currently exceeding this limit.

Table 30 Noise Level (L_5) Due to Non-Varsity Football Stadium Uses

Receiver	L_5, dBA					
	High School JV and Freshman Football Games	High School Non-Football Games	Practice	Community Games and Practices	Community Special Events	Graduation
ST-1	**65**	**60 - 64**	**57**	**56 - 67**	**68 - 71**	**71**
ST-2	60	54 - 59	50	48 - **61**	**62 - 65**	**65**
ST-3	**66**	**60 - 65**	52	50 - **66**	**67 - 71**	**71**
ST-4	55	50 - 54	45	44 - 55	**56 - 60**	**60**
ST-5	50	43 - 49	45	43 - 51	52 - 54	54
ST-6	**57**	50 - **56**	54	53 - **58**	**58 - 61**	**61**
ST-7	51	46 - 50	43	42 - 51	52 - 56	**56**

~~Table 29~~ Table 31~~30~~ compares the existing and future 24-hour CNEL on a football game day.

Table 3129 Increase in CNEL on a Varsity Game Day (dBA)

Receiver*		Noise Source	Existing	Future	Increase
ST-1	Top of hill near homes north of field	Ambient	51.7	51.7	
		Football Games	52.6	60.5	
		Total	55.2	61.0	**5.8**
ST-2	Near multi-family homes on Aspen Dr.	Ambient	47.6	47.6	
		Football Games	46.4	54.6	
		Total	50.0	55.4	**5.3**
ST-3	San Marin Drive	Ambient	64.1	64.1	
		Football Games	52.1	60.5	
		Total	64.4	65.7	1.3
ST-4	San Felipe Way	Ambient	56.1	56.1	
		Football Games	41.8	49.6	
		Total	56.3	57.0	0.7
ST-5	Santa Yorma Court	Ambient	47.5	47.5	
		Football Games	39.4	44.1	
		Total	48.1	49.1	1.0
ST-6	North of baseball field near property line	Ambient	47.9	47.9	
		Football Games	44.2	51.2	
		Total	49.5	52.9	3.4
ST-7	Santa Gabriella Court	Ambient	43.1	43.1	
		Football Games	38.8	45.6	
		Total	44.5	45.6	3.1

Source: RDG Acoustics, 2016

Based on the comparison, most of the sensitive receptors would experience a CNEL increase which is less than the threshold of 3 to 5 dBA. However, the residences to the north of the school (ST-1 and ST-2) would experience an increase of up to 5.8 dBA CNEL which is greater than the threshold for a significant increase of 5 dBA. Therefore, the projected increase in CNEL at residences north of the school would be a significant impact.

Table 32~~Table 30~~ shows the change in the annual average CNEL as a result of the project.

Table 3230 Increase in Annual Average CNEL from All Field Activities (dBA)

Receiver		Existing	Future	Increase
ST-1	Top of hill near homes north of field	53.8	54.2	0.4
ST-2	Near multi-family homes on Aspen Dr.	48.9	49.2	0.3
ST-3	San Marin Drive	64.2	64.2	< 0.1
ST-4	San Felipe Way	56.2	56.2	< 0.1
ST-5	Santa Yorma Court	50.7	50.7	< 0.1
ST-6	North of baseball field near property line	51.7	52.0	0.3
ST-7	Santa Gabriella Court	43.8	43.9	0.1

Source: RDG Acoustics, 2016

The increase in noise levels shown in Table 32~~Table 30~~ accounts for the field use during evening hours which are subject to a 5 dBA penalty in the calculation of CNEL. The annual average CNEL would increase by up to 0.4 dBA, which is less than the threshold of 3 to 5 dBA. Therefore, the increase in annual average CNEL would be a less than significant impact. Nonetheless, because the project would result in an exceedance of the hourly L_5 noise threshold at nearby sensitive receptors during field activities, as well as an exceedance of the CNEL threshold for varsity game days at ST-1 and ST-2, noise impacts would be significant.

MITIGATION MEASURES

The District has evaluated a range of mitigation measures for their feasibility in reducing noise during athletic events as heard by nearby residents to the north and east. One potential measure is a sound wall at the property line adjacent to homes on San Ramon Way (near ST-6). However, a sound wall in this location would not be effective at reducing noise because those homes are elevated approximately 30 to 40 feet above the property line. Similarly, a sound wall at the front yards of homes across San Marin Drive would not be feasible either due to required openings for driveways. A barrier could be constructed along the eastern edge of the field and behind the visitor bleachers which would block sound for the homes on San Marin Drive. However, the noise reduction provided by this barrier would be limited since the existing bleachers and the edge of the field already provide some noise reduction for these homes. The noise assessment prepared by RGD Acoustics found that a barrier along the northern property line of the project site would reduce noise from the crowd and field activities by approximately 5 dBA at a first-floor (ground-level) elevation. This would be a noticeable reduction in crowd and field noise but noise levels would still exceed an L_5 of 55 dBA at some locations. Rooms on the second story of two-story homes would not benefit from the installation of a sound wall eight to ten feet in height. Therefore, although a sound wall along the northern property boundary would decrease the severity of the noise impact, it would not reduce the impact to a less than significant level. Additionally, a solid barrier eight to ten feet in height would introduce additional aesthetic impacts and could provide a place for criminals to hide or abscond. The following mitigation measure is considered feasible and is required for this project.

MITIGATION MEASURE ~~IMPACT~~ N-2~~1~~ PUBLIC ADDRESS SYSTEM DESIGN

The District shall design and operate the new PA system to not exceed an L_5 sound level of 55 dBA at the surrounding residences to the extent possible. This would require distributing highly directional and carefully aimed loudspeakers around the bleachers and field. The distance between the loud speakers and the coverage area shall be minimized to reduce spillover noise to the community. In addition, the system output volume shall be regulated by an audio processor with the ability to limit the audio output levels (e.g. compressor/limiter). After installation of the PA system, the District shall retain a qualified acoustic engineer to test the system and ensure that PA noise does not exceed an L_5 sound level of 55 dBA at the surrounding residences to the extent possible. The PA system shall be adjusted as necessary to comply with the L_5 threshold to the extent possible.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure N-2 would result in noticeable reductions in PA sounds at distant residences with the new PA system; however, even with a state-of-the-art equipment and design, it is possible that an L_5 sound level of 55 dBA at the nearest residences would not be achievable. Furthermore, at locations where the PA noise can be reasonably limited to 55 dBA, noise from the crowd would still exceed 55 dBA. Therefore, the resulting noise levels would exceed the adopted thresholds and remain significant after mitigation. The project's impact related to hourly L_5 noise levels for nearby sensitive receptors during field activities and the increase in CNEL at ST-1 and ST-2 would remain significant and unavoidable.

THRESHOLD 1: WOULD THE PROJECT RESULT IN EXPOSURE OF PERSONS TO OR GENERATION OF NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN ANY APPLICABLE PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

THRESHOLD 3: WOULD THE PROJECT RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT ABOVE LEVELS EXISTING WITHOUT THE PROJECT?

IMPACT N-3 PROJECT-GENERATED TRAFFIC WOULD INCREMENTALLY INCREASE NOISE LEVELS ON AREA ROADWAYS. HOWEVER, THE CHANGE IN ROADWAY NOISE FROM TRAFFIC GENERATED BY THE PROJECT WOULD NOT EXCEED FTA NOISE THRESHOLDS UNDER TYPICAL CONDITIONS. THEREFORE, THE IMPACT OF INCREASED TRAFFIC NOISE ON EXISTING USES WOULD BE LESS THAN SIGNIFICANT.

The addition of stadium lighting would allow for sporting events, such as football games, to take place at nighttime. As discussed in Section 4.6, *Transportation and Traffic*, this shift in the timing of sporting events would incrementally increase the number of vehicle trips to and from the site, which would increase traffic noise on area roadways. The main sources of existing noise on and adjacent to the project site are traffic noise from adjacent and nearby roadways, including San Marin Drive and Novato Boulevard.

Based on the project traffic study, the majority of traffic generated by the project would travel on San Marin Drive and Novato Boulevard, with less traffic using side streets such as Sutro Avenue, Wilson Avenue, and San Andreas Drive. This analysis focuses on the increase in traffic noise from 6:00 PM to 8:00 PM, when the greatest increase in traffic would occur as spectators arrive at a home football game. Table 33~~Table 31~~ compares the projected increase in peak hour noise levels during this evening time frame to FTA thresholds.

Table 33~~31~~ Increase in Traffic Noise Under Existing Traffic Conditions

Receptor	Existing (dBA L_{eq})	Existing Plus Project (dBA L_{eq})	Change in Traffic Noise Level	FTA Threshold	Threshold Exceeded?
1-San Marin Drive	66.8	68.1	1.3	1	Yes
2-San Marin Drive	66.9	68.6	1.7	1	Yes
3-San Marin Drive	67.2	68.4	1.2	1	Yes
4-San Marin Drive	69.8	71.0	1.1	1	Yes
5-San Marin Drive	60.6	61.9	1.3	2	No
6-San Marin Drive	65.4	65.6	0.2	1	No
7-San Marin Drive	63.5	64.0	0.5	2	No
8-San Marin Drive	71.6	72.0	0.4	1	No
9-San Marin Drive	72.2	72.6	0.4	1	No
10-San Marin Drive	67.5	68.0	0.5	1	No
11-San Andreas Drive	59.0	60.2	1.2	3	No
12-Sutro Avenue	59.3	59.9	0.6~~1~~	3	No
13-Wilson Avenue	65.7	66.6	0.9	1	No
14-Novato Boulevard	67.6	69.2	1.6	1	Yes
15-Novato Boulevard	65.1	65.5	0.4	1	No
16-Novato Boulevard	68.5	69.6	1.1	1	Yes
17-Novato Boulevard	73.1	73.8	0.7	1	No
18-Novato Boulevard	72.3	72.9	0.6	1	No
19-Novato Boulevard	71.9	72.3	0.4	1	No
20-Novato Boulevard	69.3	69.8	0.5	1	No
21-Novato Boulevard	71.5	71.9	0.4	1	No
22-De Long Avenue	65.6	66.0	0.4	1	No
23-De Long Avenue	72.8	73.1	0.3	1	No
24-De Long Avenue	73.2	73.5	0.3	1	No

Source: ~~RDG Associates, 2016~~Rincon Consultants, Inc. and DKS, 2016

As shown in Table 33~~Table 31~~, traffic generated by the project would incrementally increase roadway noise before and after events. The increase in traffic noise from spectators of football games and graduation attendees would exceed FTA thresholds at four receptor locations on San Marin Drive and two receptor locations on Novato Boulevard. However, this substantial increase in traffic noise on San Marin Drive and Novato Boulevard would only occur approximately 15~~16~~ times or fewer per year at home football games (plus any home playoff games) and other large events such as graduation and for a maximum duration of two hours total per event. Traffic noise from spectators of football games and graduation attendees would not be typical of the traffic noise associated with project activities during the vast majority of the year. Therefore, traffic noise associated with project activities would not exceed FTA thresholds under typical conditions, and this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

SIGNIFICANCE AFTER MITIGATION

Noise impacts related to project-related traffic would be less than significant without mitigation.

Cumulative Impacts

Temporary Construction Impacts

Construction of the proposed project and related projects in the area, as identified in ~~Table 5~~Table 6 in Chapter 3, *Environmental Setting*, would generate similar noise levels compared to the proposed project. As discussed above, these noise levels generally would not exceed any local threshold because the applicable noise ordinances contain exemptions for temporary construction noise. Construction noise is localized and rapidly attenuates within an urban environment. Therefore, related projects outside the immediate site vicinity would be located too far from the project site to contribute to an increase in ambient noise levels associated with construction in the project area. The project's contribution to the cumulative increase would be less than cumulatively considerable. Cumulative construction noise impacts would be less than significant.

Operational Impacts

Cumulative development in the City of Novato would incrementally increase traffic on the roadways in the vicinity of San Marin High School. This cumulative increase in traffic would subject sensitive receptors to additional roadway noise. Table 34~~Table 32~~ shows modeled sound levels for Future Year 2040 with traffic from cumulative traffic, with and without the project, and compares changes in traffic noise to FTA thresholds.

Table 3432 Increase in Traffic Noise Under Future (2040) Traffic Conditions

Receptor	Future 2040 (dBA L_{eq})	Future 2040 Plus Project (dBA L_{eq})	Change in Traffic Noise Level	FTA Impact Threshold (dBA L_{eq})	Threshold Exceeded?
1-San Marin Drive	66.8	68.1	1.3	1	Yes
2-San Marin Drive	66.9	68.6	1.7	1	Yes
3-San Marin Drive	67.2	68.4	1.2	1	Yes
4-San Marin Drive	69.8	71.0	1.2	1	Yes
5-San Marin Drive	60.6	61.9	1.3	2	No
6-San Marin Drive	65.4	65.6	0.2	1	No
7-San Marin Drive	63.5	64.0	0.5	2	No
8-San Marin Drive	71.6	72.0	0.4	1	No
9-San Marin Drive	72.2	72.6	0.4	1	No
10-San Marin Drive	67.5	68.0	0.5	1	No
11-San Andreas Drive	59.0	62.1	3.1	3	Yes
12-Sutro Avenue	59.0	60.1	1.1	3	No
13-Wilson Avenue	65.7	66.7	1.0	1	Yes
14-Novato Boulevard	67.8	69.3	1.5	1	Yes
15-Novato Boulevard	65.2	65.7	0.5	1	No
16-Novato Boulevard	67.7	69.7	2.0	1	Yes
17-Novato Boulevard	73.3	73.9	0.6	1	No
18-Novato Boulevard	72.5	73.1	0.6	1	No
19-Novato Boulevard	72.1	72.5	0.4	1	No
20-Novato Boulevard	69.5	70.0	0.5	1	No
21-Novato Boulevard	71.7	72.1	0.4	1	No
22-De Long Avenue	65.8	66.1	0.3	1	No
23-De Long Avenue	73.0	73.3	0.3	1	No
24-De Long Avenue	73.4	73.6	0.2	1	No

As shown in Table 34~~Table 32~~, traffic generated by the project would incrementally increase roadway noise before and after events under cumulative conditions. The increase in cumulative traffic noise would exceed FTA thresholds at four receptor locations on San Marin Drive, two receptor locations on Novato Boulevard, and one receptor location on San Andreas Drive and Wilson Avenue. However, as described above under Impact N-3, this substantial increase in cumulative traffic noise on area roadways would only occur 16 times per year at home football games (plus any home playoff games) and for a maximum duration of two hours total per event. Traffic noise from spectators of football games would not be typical of the traffic noise associated with project activities during the vast majority of the year. Therefore, traffic noise associated with project and cumulative activities would not exceed FTA thresholds under typical conditions, and this impact would be less than significant.

As discussed in Chapter 3, *Environmental Setting*, proposed and pending development in the City and surrounding areas would include approximately 151,249 square feet of non-residential development and 328 residential units. This cumulative development would result in stationary (non-traffic) operational noise increases in the vicinity of the project site. Implementation of the project would result in a

significant noise impact for nearby sensitive receptors during varsity football games. However, based on the fact that noise dissipates as it travels away from its source, noise impacts from on-site activities and other stationary sources would be limited to the project site and vicinity. Thus, cumulative operational (non-traffic) noise impacts from related projects, in conjunction with project-specific noise impacts, would not have the potential to result in cumulatively considerable adverse effects. Cumulative operational stationary (non-traffic) noise exposure would be less than significant.

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4.6 Transportation and Traffic

This section evaluates potential impacts related to transportation and traffic on and around the project site. The information on transportation and traffic impacts is taken from the *San Marin High School Stadium Improvements Project Transportation Impact Study Draft Report* prepared by DKS Associates (Appendix F of this EIR). The transportation analysis for the project was prepared according to standard methodologies and consistent with local standards. Particular attention was given to operational impacts at intersections within the project study area and impacts on parking at and around the stadium site.

The addition of lighting at the school stadiums would shift stadium events currently held during daylight hours to evening hours, enabling larger attendance. The traffic study focused on the scenario for an evening varsity football game, as these are anticipated to have the highest attendance and potentially generate the most traffic. This high attendance scenario is expected to occur approximately ten times per year and is not representative of the majority of evenings under the proposed project conditions.

The following scenarios were evaluated as part of this study:

- Existing conditions
- Existing plus project conditions
- Cumulative (2040) conditions
- Cumulative (2040) plus project conditions

4.6.1 Setting

Study Intersections

A total of 21 intersections were selected for analysis of potential impacts within the study area. Signalized and all-way stop controlled intersections along San Marin Drive and Novato Boulevard were selected as study intersections. The San Marin Drive and Novato Boulevard corridors provide access between US 101 and San Marin High School. The following intersections along the corridors have potential to be impacted by increased traffic flow from the project and were studied as part of this analysis:

- NB US 101 Ramps & Atherton Avenue (Caltrans)
- SB US 101 Ramps & Atherton Avenue (Caltrans)
- Redwood Boulevard & San Marin Drive
- E. Campus Drive & San Marin Drive
- W. Campus Drive & San Marin Drive
- Simmons Lane & San Marin Drive
- San Carlos Way & San Marin Drive
- San Andreas Drive & San Marin Drive
- San Ramon Way & San Marin Drive
- NB US 101 Ramps & De Long Avenue (Caltrans)
- SB US 101 Ramps & De Long Avenue (Caltrans)
- Reichert Avenue & De Long Avenue
- Redwood Boulevard & Diablo Avenue
- Novato Boulevard & Diablo Avenue
- 7th Street & Novato Boulevard
- Grant Avenue & Novato Boulevard
- Simmons Lane & Novato Boulevard
- Wilson Avenue & Novato Boulevard
- Raposa Vista & Novato Boulevard

- Eucalyptus Avenue & Novato Boulevard
- San Marin Drive & Novato Boulevard

Existing Roadway Network

This section describes the regional roadway network serving the project study area as well as the local access routes surrounding each school site.

Regional Facilities

The project area is connected regionally by US Highway 101 (US-101). US-101 falls under the jurisdiction of Caltrans for maintenance and operations, and is a seven-lane freeway that runs north-south to the east of the study area and also provides access to and from the Bay Area and Sonoma County. US-101 runs at grade throughout the study area. Ramps or interchanges serving the study sites include De Long Avenue, providing access to Novato Boulevard and Atherton Avenue, providing access to San Marin Drive.

Facilities Serving San Marin High School

San Marin High School is located approximately two and a half miles west of US 101. Access from US 101 is mainly provided by Novato Boulevard in the south and San Marin Drive in the north. The school site location and local roadway network with intersection geometries are shown in Figure 13 and Figure 14. Facilities that serve the high school include:

- San Marin Drive is a four lane roadway running east-west to the high school and located north of Novato Boulevard. San Marin Drive is connected to US-101 by Atherton Avenue and runs along the eastern side of the campus. The entrance to the school parking lot adjacent to the stadium is located on San Marin Drive just north of San Carlos Way. There is on-street parking along San Marin Drive, with time-of-day usage restrictions where it borders the campus.
- Novato Boulevard is a two and four lane roadway also running east-west to the high school. Novato Boulevard is connected to US-101 by De Long Avenue and Diablo Avenue. There is on-street parking along the majority of Novato Boulevard. Access to one of the main campus parking lots is on Novato Boulevard, near the intersection of San Marin Drive and Novato Boulevard.

Figure 13 San Marin High School Lane Configuration

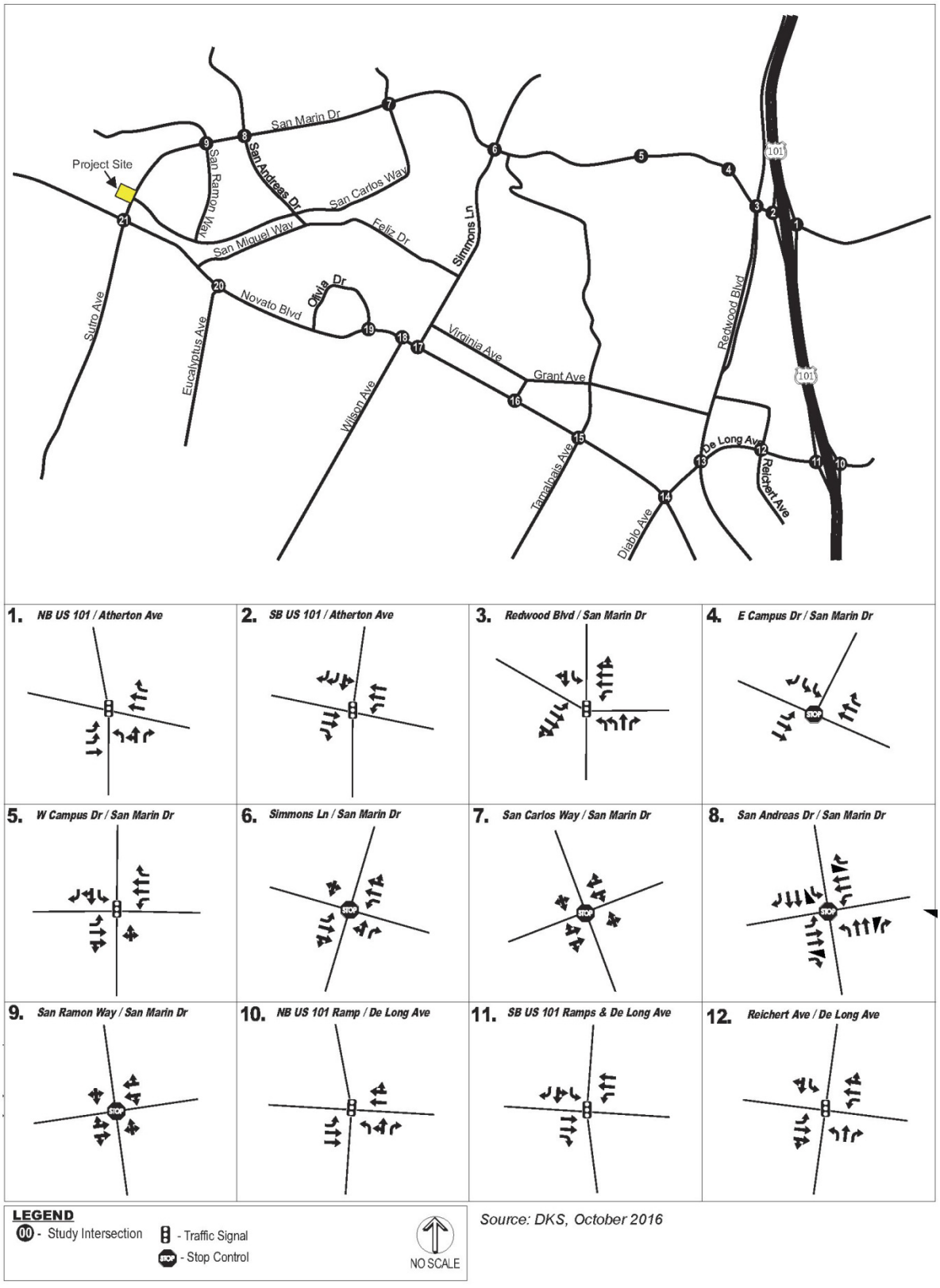
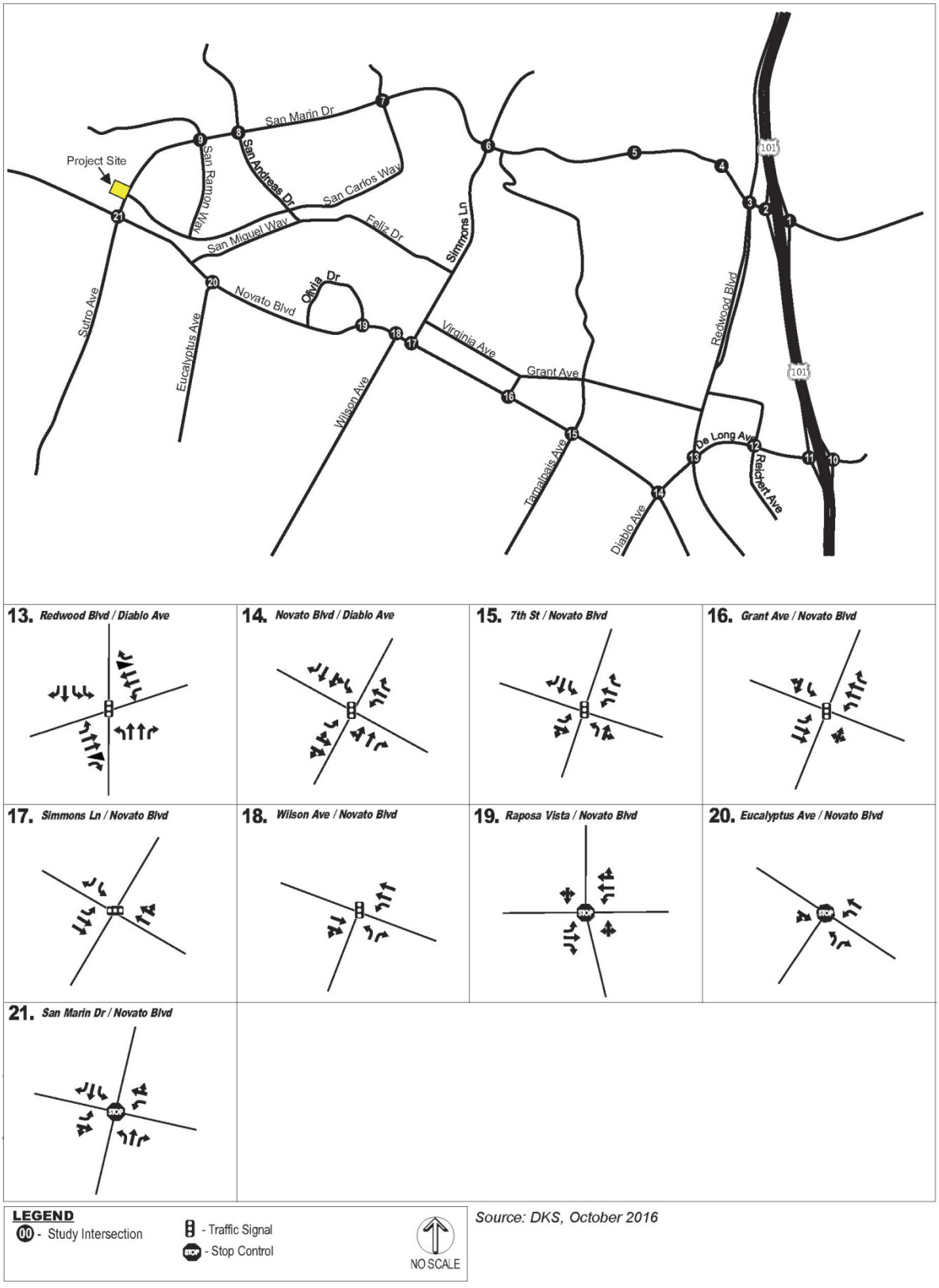


Figure 14 San Marin High School Lane Configuration Continued



Pedestrian and Bicycle Access

The main pedestrian access to the stadium is from San Marin Drive adjacent to the stadium. There are crosswalks at the intersection of San Marin Drive and San Carlos Way. Access into the stadium is limited to gateways as a fence surrounds the stadium. The fence provides two main entry points, with one from the main stadium parking lot along its eastern side and another at its southwestern corner. Pedestrians may also reach the stadium from the south of campus from the parking lot located on Novato Boulevard and other parking areas within the campus. There are crosswalks at the intersection of San Marin Drive and Novato Boulevard, where the intersection meets the Class I bikeway.

Class I and Class II bicycle facilities exist in the vicinity of the campus. Class II bicycle lanes exist along San Marin Drive between US 101 and Simmons Lane, and Novato Boulevard ~~leading to the school site~~ within the study area. In accordance with the City of Novato Bicycle/Pedestrian Plan, Class II bicycle lanes are facilities that provide a striped and stenciled lane for bicycle travel. Class I bikeways, also referred to as shared-use paths, serve the exclusive use of bicycles and pedestrians and are completely separated from the street. Novato Boulevard includes a Class I bikeway from Eucalyptus Avenue to its intersection with San Marin Drive at the campus.

Transit Facilities and Service

The study area is served by regional transit service with Golden Gate Transit bus routes. Route 54 is a commuter bus route and stops at San Marin High School. Route 54 runs southbound from Novato to San Francisco weekday mornings, with northbound service in the evenings. Golden Gate Transit Route 56 provides a similar service. However, due to the commuter-oriented nature of these services, they are unlikely to serve substantial travel to and from a school site on game days.

Existing Intersection Operations

Intersection Level of Service (LOS) is a qualitative assessment of an intersection's performance during peak traffic periods. LOS is characterized by a letter grade – A though F – relating to the average delay experienced at a signalized intersection or the worst approach delay at an unsignalized intersection. Details on the calculation of intersection LOS as well as the vehicle, bicycle, and pedestrian counts that were collected as inputs may be found in the Transportation Impact Study (Appendix F).

Most jurisdictions explicitly or implicitly specify the definitions of LOS contained in the Highway Capacity Manual (HCM) 2000 edition published by the Transportation Research Board. The HCM 2000 standard thresholds and definitions for intersection LOS were used in the traffic study prepared for the project and are described in Table 35~~Table 33~~.

Table 35~~33~~ LOS Thresholds and Definitions

Level of Service	Average Control Delay (seconds/vehicle)		Description
	Signalized Intersections	Unsignalized Intersections	
A	≤ 10	≤ 10	Free flow/Insignificant Delay
B	> 10 and ≤ 20	> 10 and ≤ 15	Stable Operation/Minimal Delay
C	> 20 and ≤ 35	> 15 and ≤ 25	Stable Operation/Acceptable Delay
D	> 35 and ≤ 55	> 25 and ≤ 35	Approaching Unstable/Tolerable Delay
E	> 55 and ≤ 80	> 35 and ≤ 50	Unstable Operation/Significant Delay
F	> 80	> 50	Forced Flow/Excessive Delay

Source: 2000 Highway Capacity Manual, Transportation Research Board, 2000.

Worst Approach Delay (in seconds per vehicle) for unsignalized intersections

This study calculated intersection LOS for two time periods corresponding to the expected arrival and departure times for high attendance events such as evening football games. Trip arrivals are expected to occur between 6:00 and 8:00 PM and departures would occur between 8:00 and 10:00 PM. Under Existing conditions, all but one of the study intersections currently operate at LOS C or better during the 6:00 to 8:00 PM period, and all intersections operate at LOS B or better during the 8:00 and 10:00 PM period, as shown in Table 36~~Table 34~~ and Table 37~~Table 35~~, as well as Figure 15 and Figure 16.

Table 36~~34~~ Existing Intersection Level of Service 6:00 PM - 8:00PM

#	Intersections	Control[1]	Existing 6:00 -8:00 PM	
			LOS[2]	Del/Veh[3]
1	NB US 101 Ramps & Atherton Avenue	Signalized	C	29.2
2	SB US 101 Ramps & Atherton Avenue	Signalized	B	10.6
3	Redwood Boulevard. & San Marin Drive	Signalized	B	15.1
4	E. Campus Drive & San Marin Drive	Signalized	A	7.1
5	W. Campus Drive & San Marin Drive	Signalized	A	4.5
6[4]	Simmons Lane & San Marin Drive	AWSC	B	13.9
7	San Carlos Way & San Marin Drive	AWSC	B	10.4
8[4]	San Andreas Drive & San Marin Drive	AWSC	B	12.6
9	San Ramon Way & San Marin Drive	AWSC	A	9.1
10	NB US 101 Ramps & De Long Avenue	Signalized	A	9.5
11	SB US 101 Ramps & De Long Avenue	Signalized	A	5.5
12	Reichert Avenue & De Long Avenue	Signalized	B	12.3
13	Redwood Boulevard & Diablo Avenue	Signalized	B	18.1
14	Novato Boulevard & Diablo Avenue	Signalized	B	19. 6
15	7th Street & Novato Boulevard	Signalized	B	13.5
16	Grant Avenue & Novato Boulevard	Signalized	A	6.2
17	Simmons Lane & Novato Boulevard	Signalized	A	7.4
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.5
19[4]	Raposa Vista & Novato Boulevard	AWSC	B	10.7
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	9.6
21[4]	San Marin Drive & Novato Boulevard	AWSC	B	12.2

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 33~~

[3] Average delay per vehicle (seconds)

[4] HCM 2010

Table 37~~35~~ Existing Intersection Level of Service 8:00 PM - 10:00 PM

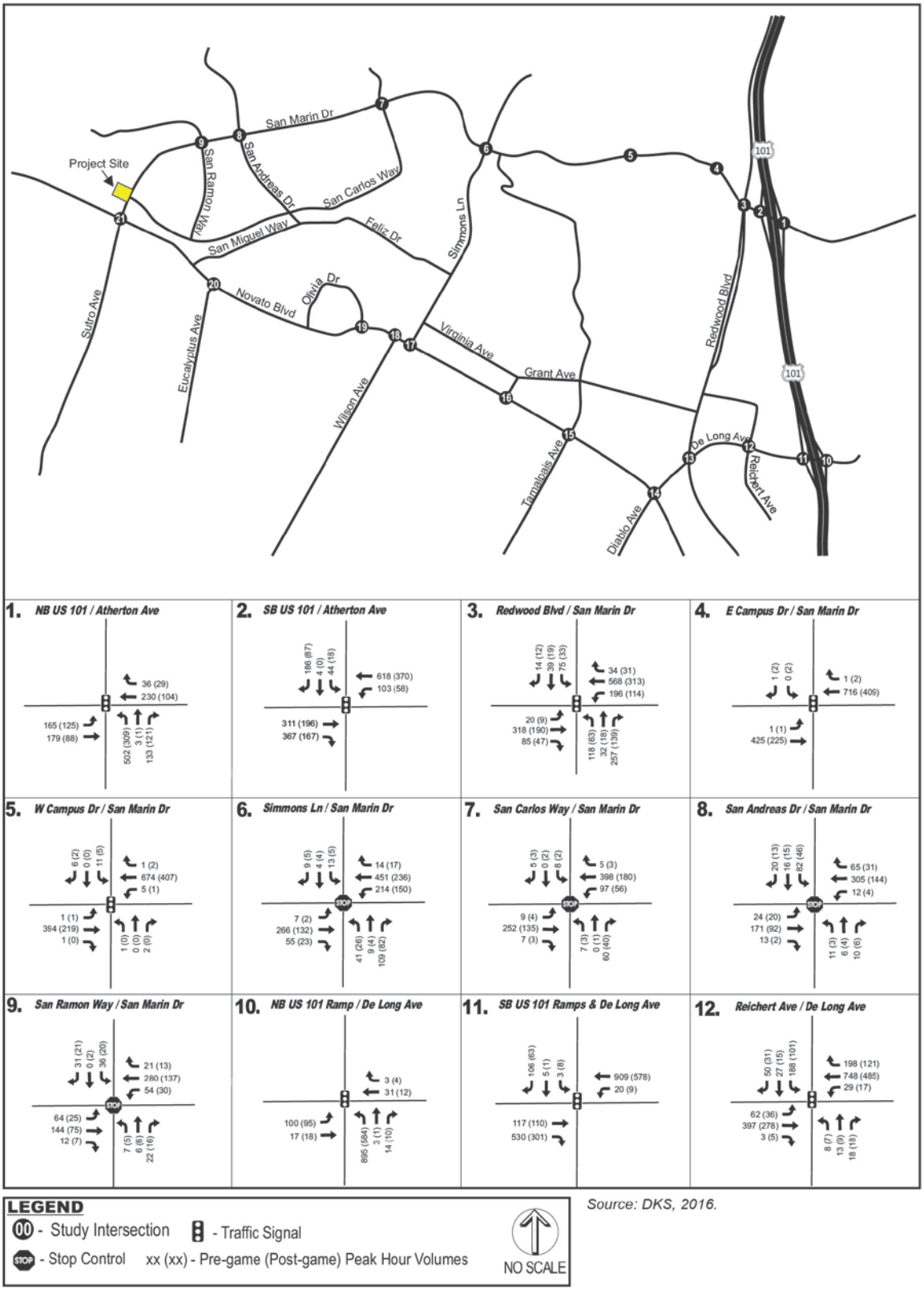
#	Intersections	Control[1]	Existing 8:00 -10:00 PM	
			LOS[2]	Del/Veh[3]
1	NB US 101 Ramps & Atherton Avenue	Signalized	B	18.4
2	SB US 101 Ramps & Atherton Avenue	Signalized	A	6.3
3	Redwood Boulevard. & San Marin Drive	Signalized	B	11.4
4	E. Campus Drive & San Marin Drive	Signalized	A	7.8
5	W. Campus Drive & San Marin Drive	Signalized	A	4.1
6	Simmons Lane & San Marin Drive	AWSC	A	9.7
7	San Carlos Way & San Marin Drive	AWSC	A	7.7
8	San Andreas Drive & San Marin Drive	AWSC	A	8.8
9	San Ramon Way & San Marin Drive	AWSC	A	7.5
10	NB US 101 Ramps & De Long Avenue	Signalized	A	87.7
11	SB US 101 Ramps & De Long Avenue	Signalized	A	4.9
12	Reichert Avenue & De Long Avenue	Signalized	A	7.6
13	Redwood Boulevard & Diablo Avenue	Signalized	B	14.9
14	Novato Boulevard & Diablo Avenue	Signalized	B	14.4
15	7th Street & Novato Boulevard	Signalized	B	10.8
16	Grant Avenue & Novato Boulevard	Signalized	A	6.0
17	Simmons Lane & Novato Boulevard	Signalized	A	7.3
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.1
19	Raposa Vista & Novato Boulevard	AWSC	A	9.0
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	8.1
21	San Marin Drive & Novato Boulevard	AWSC	A	8.8

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 33~~

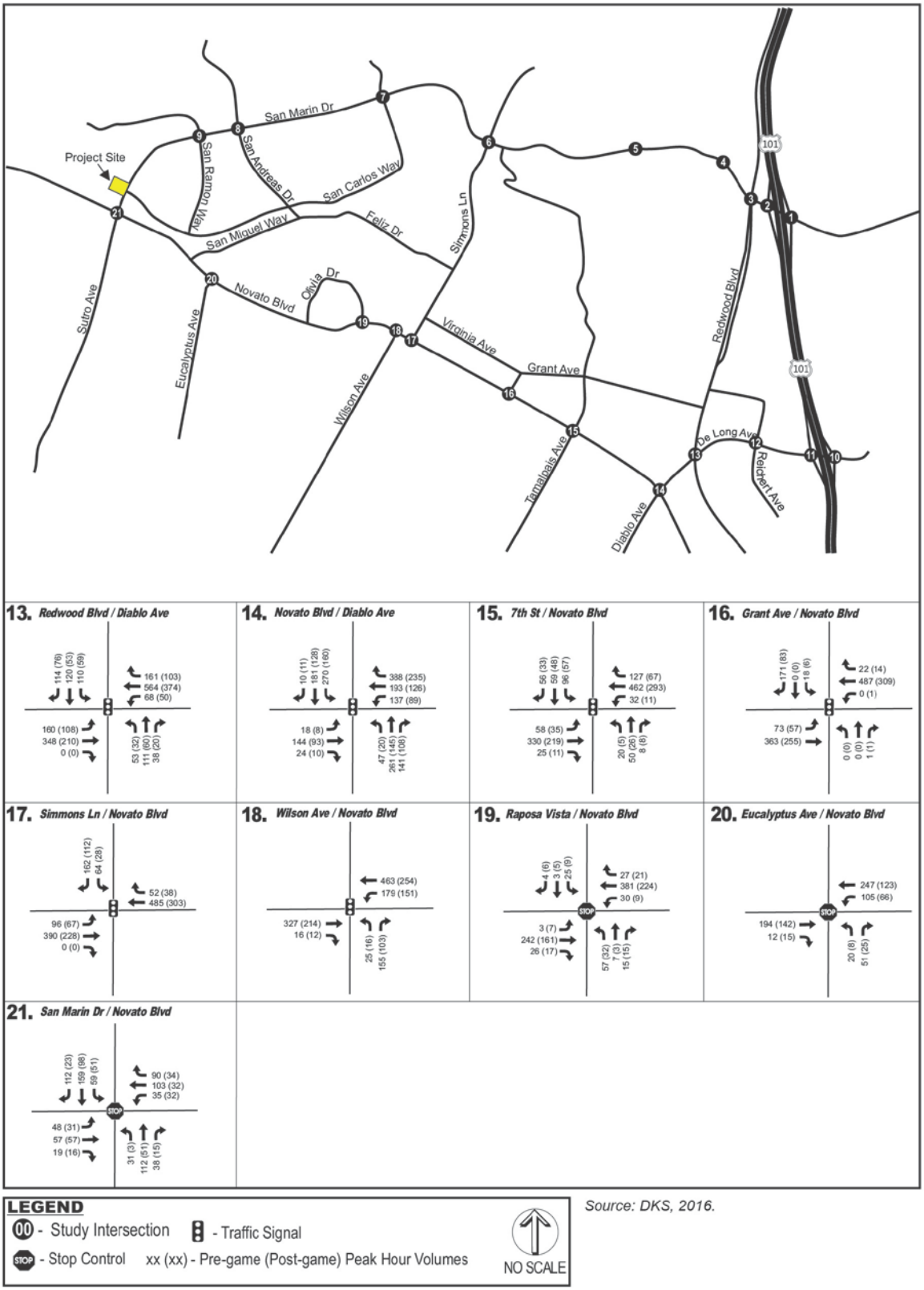
[3] Average delay per vehicle (seconds)

Figure 15 San Marin High School Existing Conditions Turning Movement



Source: DKS, 2016.

Figure 16 San Marin High School Existing Conditions Turning Movement Continued



Source: DKS, 2016.

4.6.2 Impact Analysis

Methodology and Significance Thresholds

Intersection LOS and Standards of Significance

According to the State CEQA Guidelines, the project would result in a significant impact if it would:

1 Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit
2 Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways
3 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 risks
4 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
5 Result in inadequate emergency access
6 Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise degrade the performance or safety of such facilities

An Initial Study was prepared for the project (Appendix A). The Initial Study analyzed potentially significant impacts that may occur from implementation of the project. Based on the analysis in the Initial Study, transportation and traffic impacts related to air traffic, transportation design features, emergency access, public transit, bikeways, and pedestrian facilities were found to be less than significant. Therefore, impacts related to criteria 3, 4, 5, and 6 above are addressed in Appendix A and are not discussed further in this section. In addition, although parking impacts are discussed in the Transportation Impact Study (Appendix F), parking is not a component of the CEQA significance criteria, and therefore is not analyzed in this EIR.

LOS impacts must be compared to the relevant local standard to determine whether a significant impact is found. The City of Novato's General Plan includes the following policy and program regarding traffic operation:

> **TR Policy 4 Level of Service Standards.** Establish traffic Level of Service (LOS) standards for use in (1) evaluating the impacts of proposed development projects so the project can be redesigned or effective mitigation measures can be implemented, (2) making improvements to the roadway system, and (3) determining appropriate traffic impact fees. TR Program 4.1: Establish traffic Level of Service standards as follows:
>
> a. At intersections with signals or four-way stop signs: operation at LOS D
>
> b. At intersections with stop signs on side streets only: operation at LOS E
>
> Mitigation measures which reduce side street delay, such as traffic signals, all-way stops and/or center two-way left turn lanes need to be considered when LOS F conditions are projected for side street traffic. The volume of traffic also needs to be considered when evaluating the severity of side street traffic operations.

The study intersections in the project area consist of signalized and all-way stop controlled intersections. Therefore, any scenario which causes an intersection to fall below LOS D will be considered to have a significant impact for the purposes of this Transportation Impact Study.

Project Trip Generation

The trip generation rates developed for this analysis are intended to reflect large evening events, such as a football game or graduation ceremony. The project would enable evening events to be held on a regular basis. The most highly-attended of these events would be varsity football games and evening school activities (such as graduation), which occur up to approximately 10 times per school year. Shifting some of the events from daylight hours to the evening could enable higher attendance from community members who were previously unable to attend during regular business hours. In addition, the expected arrival period of evening events (6:00 to 8:00 PM) can potentially overlap with the tail end of evening commute traffic patterns. Therefore, for the purpose of this analysis, an event of this type was analyzed as a conservative approach to evaluating potential traffic impacts of the project.

While the traffic volumes calculated as part of this analysis would be seen at most 10 times per year, thresholds of significance do not take into account the frequency of occurrence. Any potential impacts should be considered in the context of how often they would occur.

Table 38~~Table 33~~ shows the number of vehicle trips expected to be generated by the project during the pre-event peak arrival period between 6:00 PM and 8:00 PM for an event starting at 7:00 PM. These estimates use the trip generation rates shown in ~~Table 36~~Table 39. Post-event trip generation would then have the same number of trips with reverse directionality. Total trips were distributed in a two-step process. First, the 70 percent of total project trips assumed to be from San Marin High School were distributed among study area intersections as follows: 60 percent were assumed to come from south of Novato Boulevard, 20 percent from north of Novato Boulevard west of Simmons Lane, 15 percent from north of Novato Boulevard east of Simmons Lane, and 5 percent from east of US 101. The 30 percent of trips assumed to be from visiting teams were distributed using a worst case scenario of all trips either coming from the south or the north. Visiting team trips coming from north of Novato were assumed to all exit US 101 at Atherton Avenue, continuing on San Marin Drive. Visitor trips from south of Novato were split evenly between the De Long Avenue and Atherton Avenue exits.

Table 38~~36~~Trip Generation Estimates

			Peak Hour Trips		
2014-2015 Enrollment*	Bleacher Capacity	Percent Occupied	In	Out	Total
1,076	2,400	60%	410	33	442

The Institute of Transportation Engineers (ITE) Trip Generation Manual, an industry standard reference for trip generation, does not contain trip generation rates for high school sports stadiums. The trip generation characteristics for such high school facilities are likely to be fairly specific to each community, reflecting the level of interest in high school sports, demographics, and the transportation network among other factors. Therefore, a locally appropriate trip generation rate per stadium seat was calculated for this study, as described below.

Table 39~~Table 37~~ lists the assumptions underlying the calculation of trip generation rates for this study. These assumptions reflect an event with high attendance levels such as a Friday night football game or graduation ceremony. The resulting rate, 0.31 vehicle trips per stadium seat, falls within the range of rates seen and implied in the literature (between 0.17 and 0.36). Based on input from the District, the San Marin High School bleachers are assumed to be 60% occupied during a regular-season football game. Also based on District input, the split between home school and visitor attendees is approximately 70/30

and vehicle occupancy for visitors is typically higher than for home school attendees. The result of the difference in vehicle occupancy results in an assumed 80/20 split for vehicle trips between home and visitors. Note that the trip generation rate does not separately account for additional trips by staff and athletes, which would not be included in the trip generation rate per seat. The majority of home team athletes and staff are assumed to arrive before the study period and the away team athletes and staff are assumed to arrive on one to three buses. Further explanation of the trip generation methodology is provided in Appendix E.

Table 39~~37~~ Calculation of Trip Generation Rate

Factor	Value
Home/visitor split	70/30
Auto mode share	0.97
Vehicle occupancy (home)	3
Vehicle occupancy (visitor)	5
Percent drop off	0.1
Percent stay and park	0.9
Trips in	0.28
Trips out	0.02
Total trips per occupied stadium seat	**0.31**

Project Trip Distribution and Project Generated Traffic

Trips generated by the project were distributed among study intersections taking into consideration the school attendance area, the proportion of visitor trips to home school trips, the location and observed utilization of parking facilities, and the likely direction of approach of trips for visitors and attendees from the home school. Total trips were distributed in a two-step process. First, 70% of total project trips assumed to be from the home school were distributed among study area intersections as follows: 60 percent were assumed to come from south of Novato Boulevard, 20 percent from north of Novato Boulevard west of Simmons Lane, 15 percent from north of Novato Boulevard east of Simmons Lane, and 5 percent from east of US 101. The 30 percent of trips assumed to be from visiting teams were distributed using a worst case scenario of all trips either coming from the south or the north. Visiting team trips coming from north of Novato were assumed to all exit US 101 at Atherton Avenue, continuing on San Marin Drive. Visitor trips from south of Novato were split evenly between the De Long Avenue and Atherton Avenue exits. The resulting project turning movements for each study area intersection were then added to the existing and cumulative conditions traffic volumes. Figure 17 and Figure 18 show the project turning movement volumes for the study area and Figure 19 shows the trip distribution.

Figure 17 San Marin High School Lane Configuration with Project-Generated Traffic

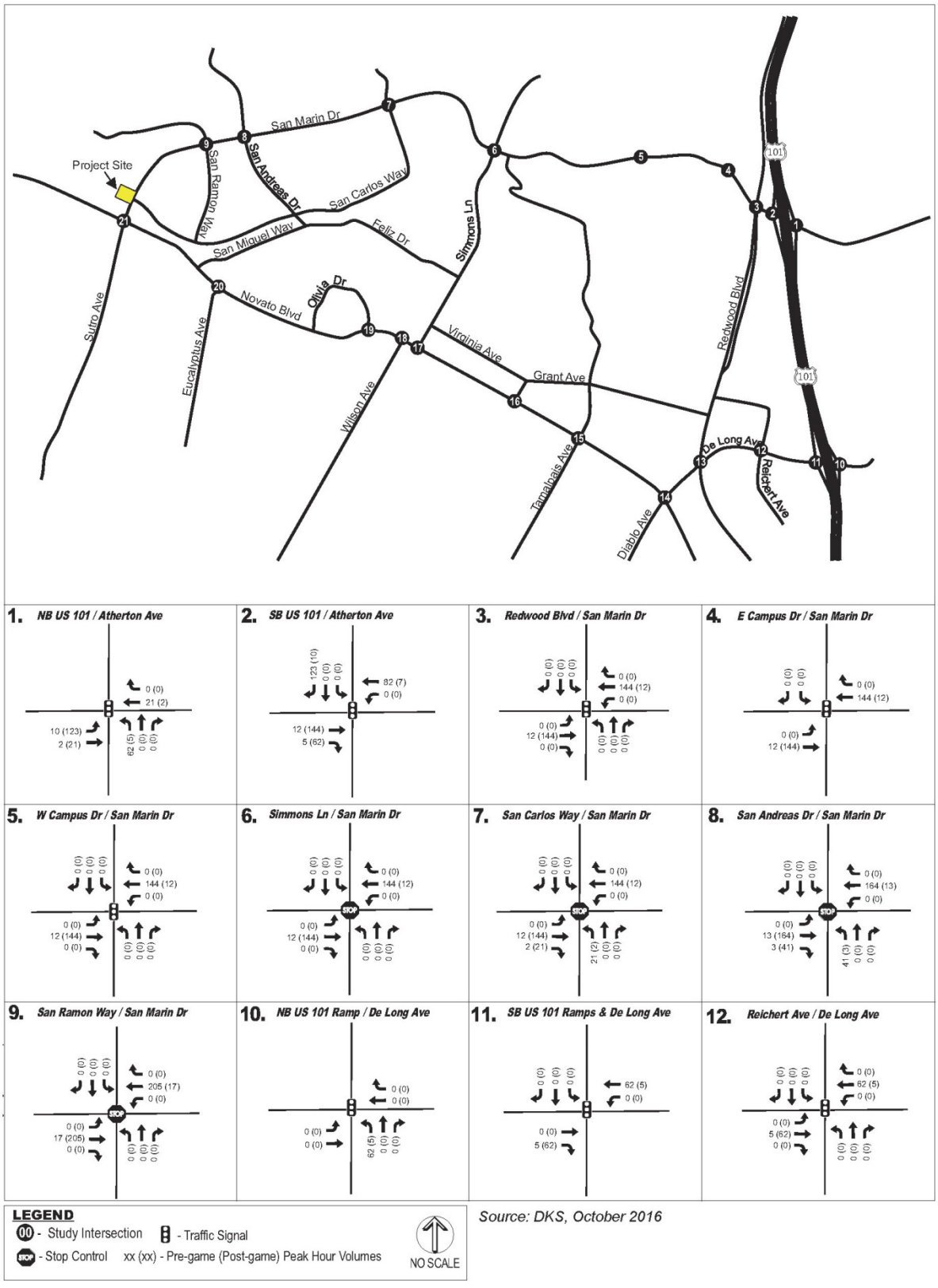
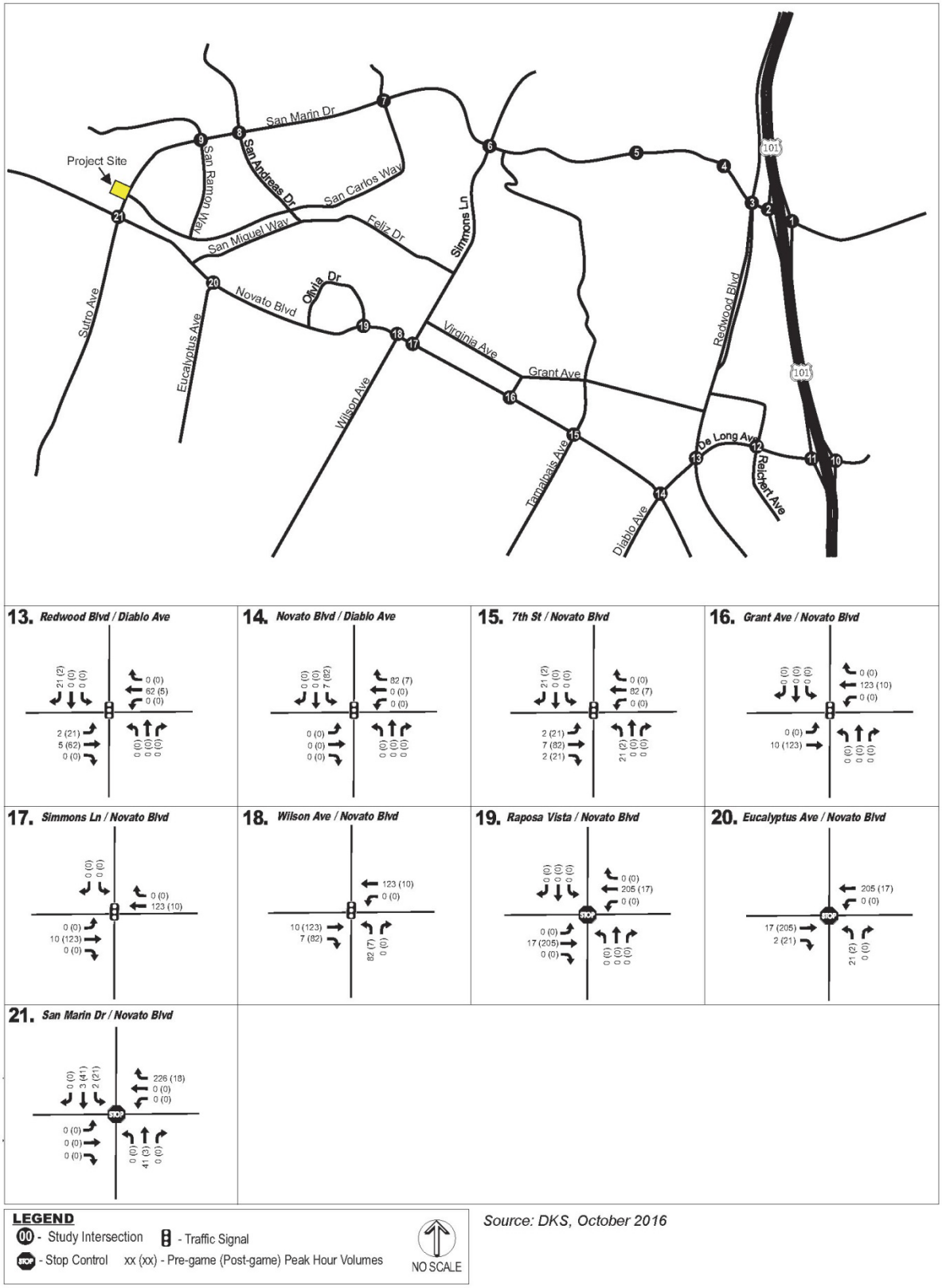
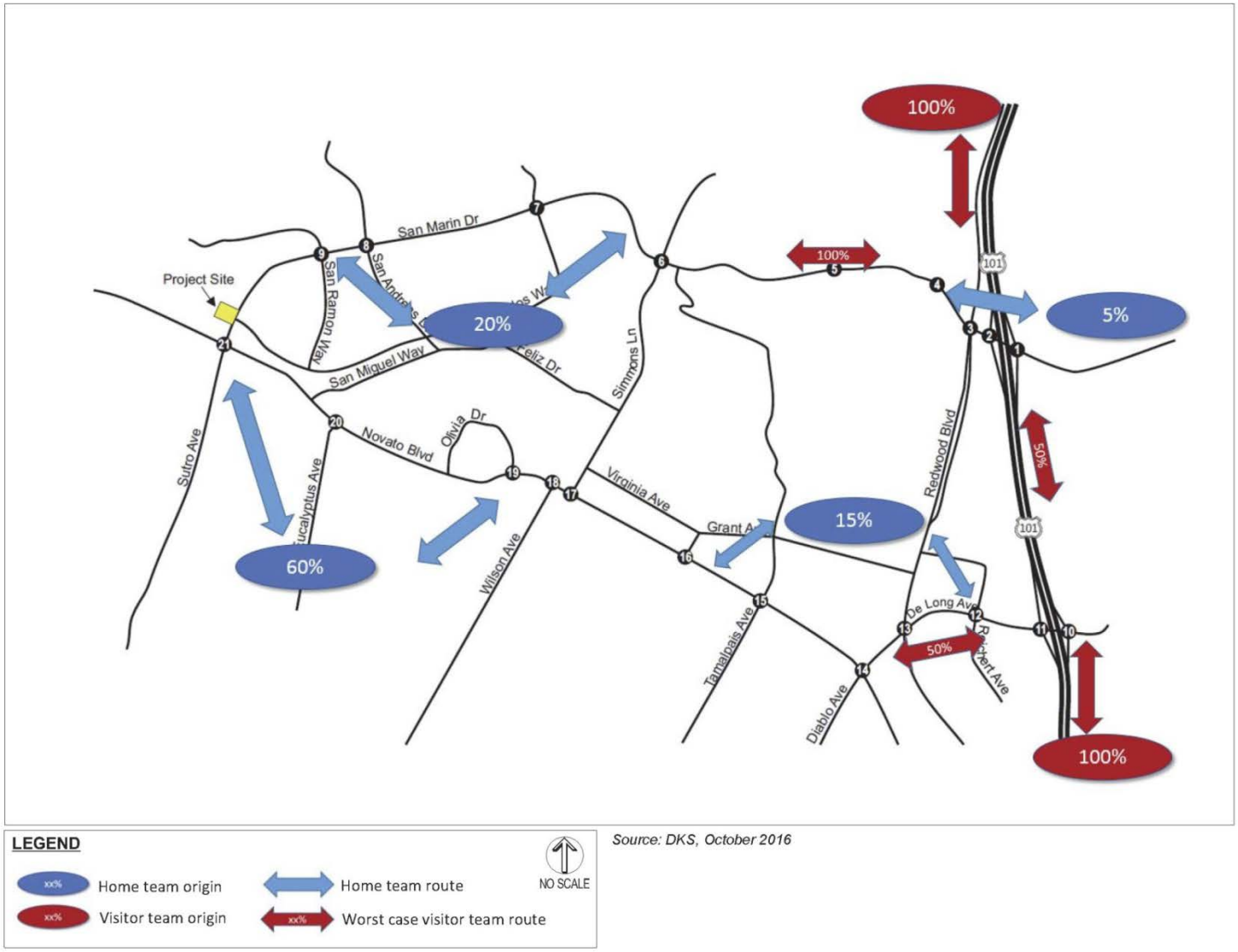


Figure 18 San Marin High School Lane Configuration with Project-Generated Traffic Continued



Source: DKS, October 2016

Figure 19 San Marin High School Study Area Project Trip Distribution



Source: DKS, October 2016

Project Impacts and Mitigation Measures

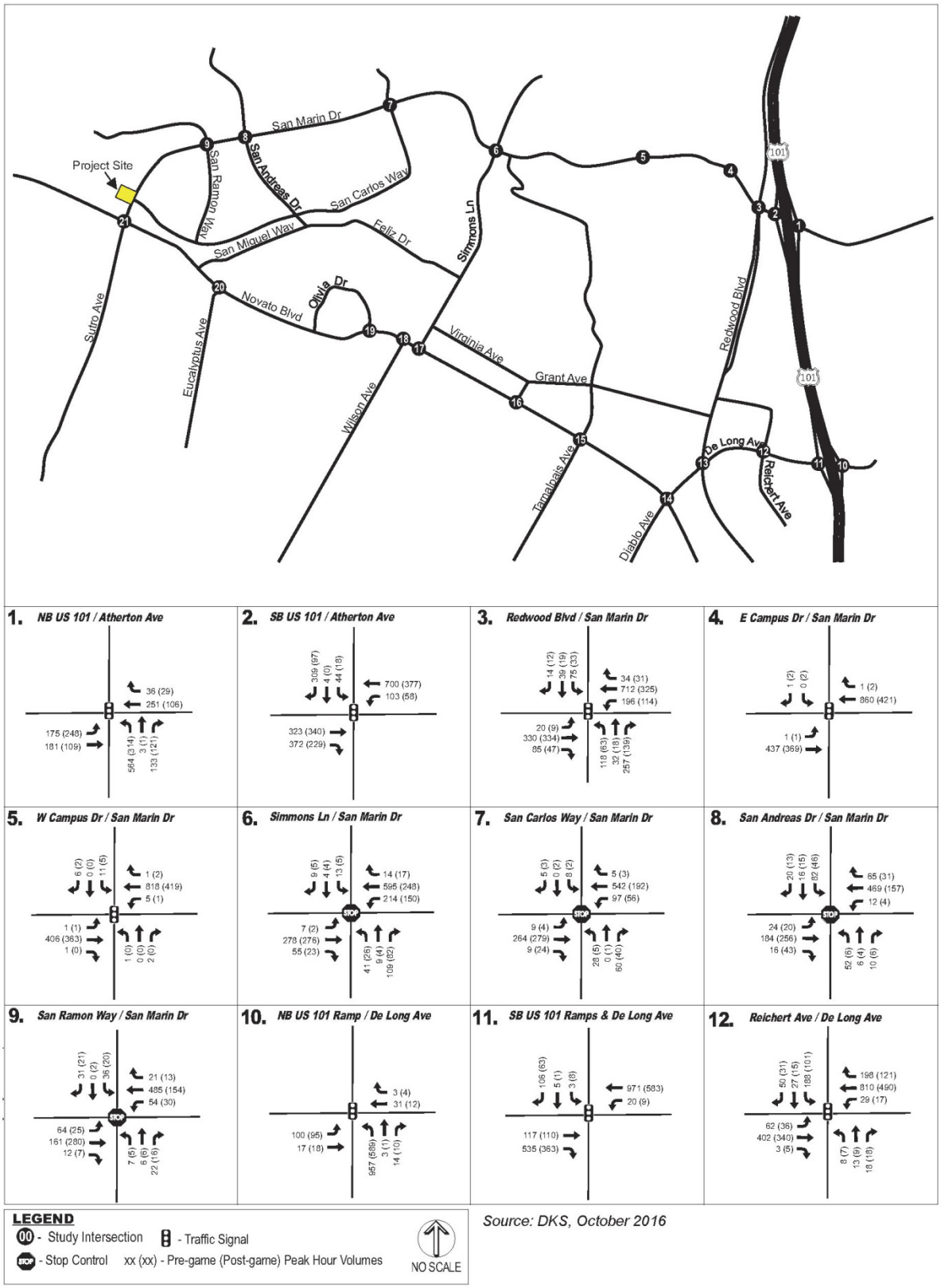
THRESHOLD 1: WOULD THE PROJECT CONFLICT WITH AN APPLICABLE PLAN, ORDINANCE, OR POLICY ESTABLISHING MEASURES OF EFFECTIVENESS FOR THE PERFORMANCE OF THE CIRCULATION SYSTEM, TAKING INTO ACCOUNT ALL MODES OF TRANSPORTATION INCLUDING MASS TRANSIT AND NON-MOTORIZED TRAVEL AND RELEVANT COMPONENTS OF THE CIRCULATION SYSTEM, INCLUDING BUT NOT LIMITED TO INTERSECTIONS, STREETS, HIGHWAYS AND FREEWAYS, PEDESTRIAN AND BICYCLE PATHS, AND MASS TRANSIT?

THRESHOLD 2: WOULD THE PROJECT CONFLICT WITH AN APPLICABLE CONGESTION MANAGEMENT PROGRAM, INCLUDING BUT NOT LIMITED TO LEVEL OF SERVICE STANDARDS AND TRAVEL DEMAND MEASURES, OR OTHER STANDARDS ESTABLISHED BY THE COUNTY CONGESTION MANAGEMENT AGENCY FOR DESIGNATED ROADS OR HIGHWAYS?

IMPACT T-1 INCREASES IN TRAFFIC FOR THE MAXIMUM STUDIED EVENT UNDER EXISTING PLUS PROJECT CONDITIONS WOULD NOT CAUSE OPERATING CONDITIONS TO FALL BELOW THE LOS STANDARD AT ANY OF THE STUDY INTERSECTIONS. THEREFORE, THE PROJECT WOULD NOT CONFLICT WITH THE CITY'S TRANSPORTATION PLANS AND THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The combined Existing plus Project turning movement volumes are illustrated in Figure 20 and Figure 21. Detailed LOS calculations for the Existing plus Project condition for both time periods are included in Appendix E for both the 6:00 to 8:00 PM and 8:00 to 10:00 PM time periods. Table 40~~Table 38~~ shows the operation of the project study intersections during the 6:00-8:00 PM time period and Table 41~~Table 39~~ shows the operation of the project study intersections during the 8:00-10:00PM time period.

Figure 20 San Marin High School Lane Configuration with Existing plus Project-Generated Traffic



Source: DKS, October 2016

Figure 21 San Marin High School Lane Confiruguration with Existing plus Project-Generated Traffic Continued

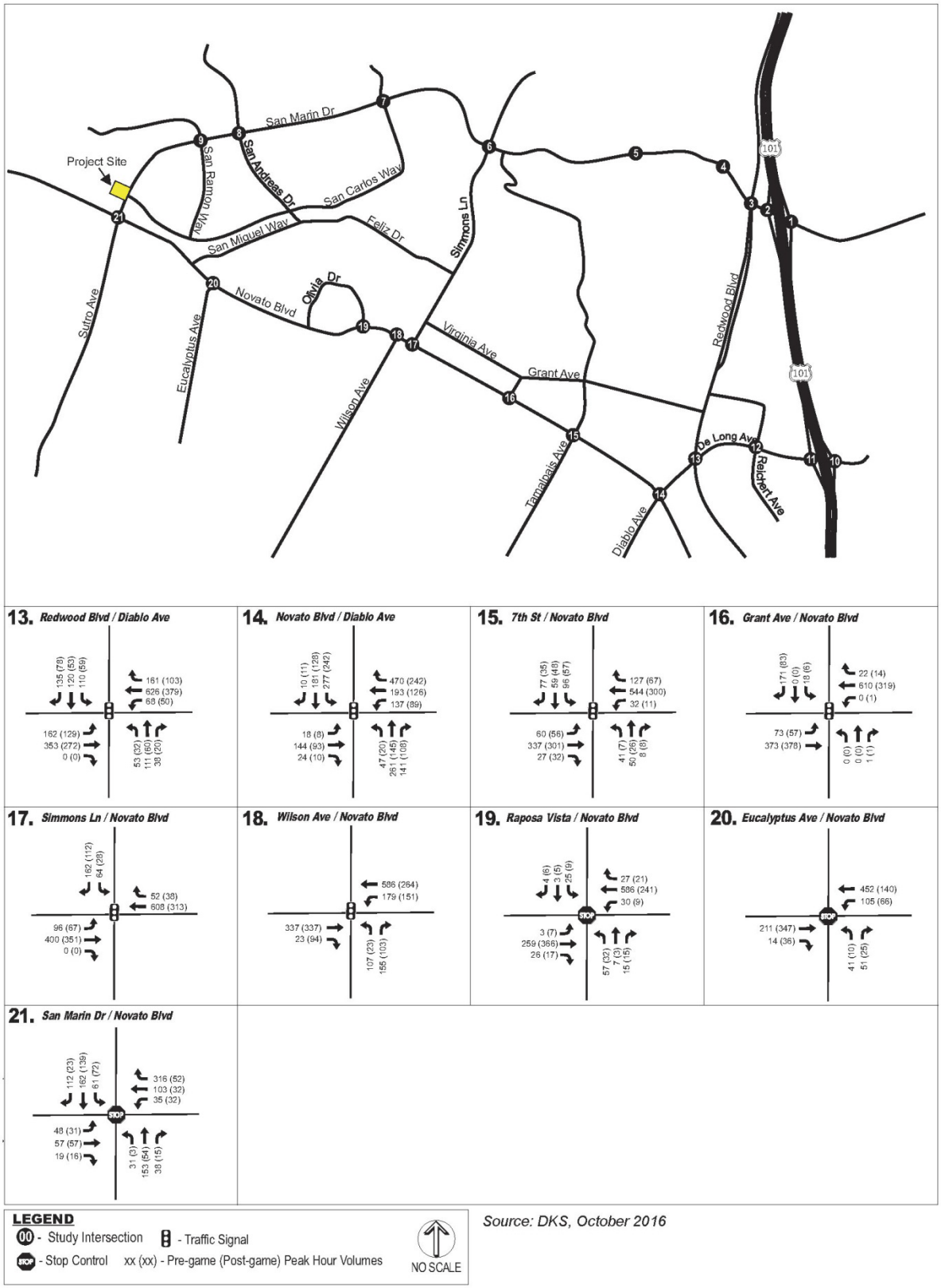


Table 40~~38~~ Existing Plus Project Conditions Intersection LOS 6:00 PM to 8:00 PM

#	Intersections	Control[1]	Existing 6:00-8:00 PM		Ex + Proj 6:00-8:00 PM		Significant Impact
			LOS[2]	Del/Veh[4]	LOS[2]	Del/Veh[4]	Y/N
1	NB US 101 Ramps & Atherton Avenue	Signalized	C	29.2	C	33.2	N
2	SB US 101 Ramps & Atherton Avenue	Signalized	B	10.6	B	10.8	N
3	Redwood Boulevard. & San Marin Drive	Signalized	B	15.1	B	14.6	N
4	E. Campus Drive & San Marin Drive	Signalized	A	7.1	A	7.7	N
5	W. Campus Drive & San Marin Drive	Signalized	A	4.5	A	4.7	N
6[4]	Simmons Lane & San Marin Drive	AWSC	B	13.9	C	17.6	N
7	San Carlos Way & San Marin Drive	AWSC	B	10.4	B	12.9	N
8[4]	San Andreas Drive & San Marin Drive	AWSC	B	12.6	D	27.2	N
9	San Ramon Way & San Marin Drive	AWSC	A	9.1	B	11.1	N
10	NB US 101 Ramps & De Long Avenue	Signalized	A	9.5	A	9.6	N
11	SB US 101 Ramps & De Long Avenue	Signalized	A	5.5	A	5.5	N
12	Reichert Avenue & De Long Avenue	Signalized	B	12.3	B	12.6	N
13	Redwood Boulevard & Diablo Avenue	Signalized	B	18.1	B	18.5	N
14	Novato Boulevard & Diablo Avenue	Signalized	B	19.6	C	20.1	N
15	7th Street & Novato Boulevard	Signalized	B	13.5	B	13.8	N
16	Grant Avenue & Novato Boulevard	Signalized	A	6.2	A	6.9	N
17	Simmons Lane & Novato Boulevard	Signalized	A	7.4	A	8.2	N
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.5	A	8.2	N
19[4]	Raposa Vista & Novato Boulevard	AWSC	B	10.7	B	13.3	N
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	9.9	A	15.1	N
21[4]	San Marin Drive & Novato Boulevard	AWSC	B	12.2	~~B~~D	~~13.3~~31.9	N

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 33~~

[3] Average delay per vehicle (seconds)

[4] HCM 2010

Table 41~~39~~ Existing Plus Project Conditions Intersection LOS 8:00 PM to 10:00 PM

#	Intersections	Control[1]	Existing 8:00-10:00 PM LOS[2]	Existing 8:00-10:00 PM Del/Veh[4]	Ex + Proj 8:00-10:00 PM LOS[2]	Ex + Proj 8:00-10:00 PM Del/Veh[4]	Significant Impact Y/N
1	NB US 101 Ramps & Atherton Avenue	Signalized	B	18.4	D	46.8	N
2	SB US 101 Ramps & Atherton Avenue	Signalized	A	6.3	A	7.2	N
3	Redwood Boulevard. & San Marin Drive	Signalized	B	11.4	B	11.1	N
4	E. Campus Drive & San Marin Drive	Signalized	A	7.8	A	8.8	N
5	W. Campus Drive & San Marin Drive	Signalized	A	4.1	A	4.6	N
6[4]	Simmons Lane & San Marin Drive	AWSC	A	9.7	B	10.8	N
7	San Carlos Way & San Marin Drive	AWSC	A	7.7	A	8.2	N
8[4]	San Andreas Drive & San Marin Drive	AWSC	A	8.8	B	10.5	N
9	San Ramon Way & San Marin Drive	AWSC	A	7.5	A	8.4	N
10	NB US 101 Ramps & De Long Avenue	Signalized	A	8.7	A	8.7	N
11	SB US 101 Ramps & De Long Avenue	Signalized	A	4.9	A	5.0	N
12	Reichert Avenue & De Long Avenue	Signalized	A	7.6	A	7.5	N
13	Redwood Boulevard & Diablo Avenue	Signalized	B	14.9	B	14.9	N
14	Novato Boulevard & Diablo Avenue	Signalized	B	14.4	B	14.8	N
15	7th Street & Novato Boulevard	Signalized	B	10.8	B	11.5	N
16	Grant Avenue & Novato Boulevard	Signalized	A	6.0	A	5.8	N
17	Simmons Lane & Novato Boulevard	Signalized	A	7.3	A	6.5	N
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.1	A	8.0	N
19[4]	Raposa Vista & Novato Boulevard	AWSC	A	9.0	B	12.0	N
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	8.1	B	11.3	N
21[4]	San Marin Drive & Novato Boulevard	AWSC	A	8.8	A	9.2	N

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 30~~

[3] Average delay per vehicle (seconds)

[4] HCM 2010

As shown in Table 40~~Table 38~~ and Table 41~~Table 39~~, increases in traffic under existing plus project conditions would not cause operating conditions to fall below the LOS standard at any of the study intersections during the 6:00-8:00 PM time period or the 8:00-10:00 PM time period. Therefore, this impact would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

~~Cumulative Impacts and Mitigation~~ Impact T-~~23~~ Increases in traffic under cumulative plus project conditions would not cause intersection operations to fall below the LOS standard at any of the study intersections. Therefore, the proposed project would not conflict with any of the City of Novato's transportation plans. This impact would be less than significant.

This scenario is based on the cumulative condition, but with the addition of traffic from the stadium lighting project. The cumulative plus project conditions game time intersection turning movement volumes are illustrated in Figure 22 and Figure 23. Table 42 ~~Table 40~~ and Table 43 ~~Table 41~~ compare the cumulative intersection operating conditions with the cumulative plus project conditions during the 6:00 - 8:00 PM and 8:00 – 10:00 PM periods respectively.

Table ~~42~~40 Comparison of Cumulative and Cumulative plus Project Conditions 6:00 to 8:00 PM

			6:00 -8:00 PM				
			Future		Future + Project		Significant Impact
#	Intersections	Control[1]	LOS[2]	Del/Veh[3]	LOS[2]	Del/Veh[3]	Y/N
1	NB US 101 Ramps & Atherton Avenue	Signalized	C	29.2	C	33.2	N
2	SB US 101 Ramps & Atherton Avenue	Signalized	B	10.6	B	10.8	N
3	Redwood Boulevard. & San Marin Drive	Signalized	B	15.1	B	14.6	N
4	E. Campus Drive & San Marin Drive	Signalized	A	7.1	A	7.7	N
5	W. Campus Drive & San Marin Drive	Signalized	A	4.5	A	4.7	N
6[4]	Simmons Lane & San Marin Drive	AWSC	B	13.9	C	17.6	N
7	San Carlos Way & San Marin Drive	AWSC	B	10.4	B	12.9	N
8[4]	San Andreas Drive & San Marin Drive	AWSC	B	12.6	D	27.2	N
9	San Ramon Way & San Marin Drive	AWSC	A	9.1	B	11.1	N
10	NB US 101 Ramps & De Long Avenue	Signalized	A	9.7	A	9.6	N
11	SB US 101 Ramps & De Long Avenue	Signalized	A	5.6	A	5.5	N
12	Reichert Avenue & De Long Avenue	Signalized	B	12.8	B	13.7	N
13	Redwood Boulevard & Diablo Avenue	Signalized	B	18.4	B	19.9	N
14	Novato Boulevard & Diablo Avenue	Signalized	B	20.4	C	20.8	N
15	7th Street & Novato Boulevard	Signalized	B	13.7	B	13.9	N
16	Grant Avenue & Novato Boulevard	Signalized	A	6.6	A	7.7	N
17	Simmons Lane & Novato Boulevard	Signalized	A	7.5	A	8.4	N
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.7	A	8.3	N
19[4]	Raposa Vista & Novato Boulevard	AWSC	B	11.0	B	13.8	N
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	9.8	C	15.1	N
21[4]	San Marin Drive & Novato Boulevard	AWSC	B	12.6	D	34.0	N

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 33~~

[3] Average delay per vehicle (seconds)

[4] HCM 2010

Figure 22 San Marin High School Lane Configuration with Cumulative plus Project Traffic Volumes

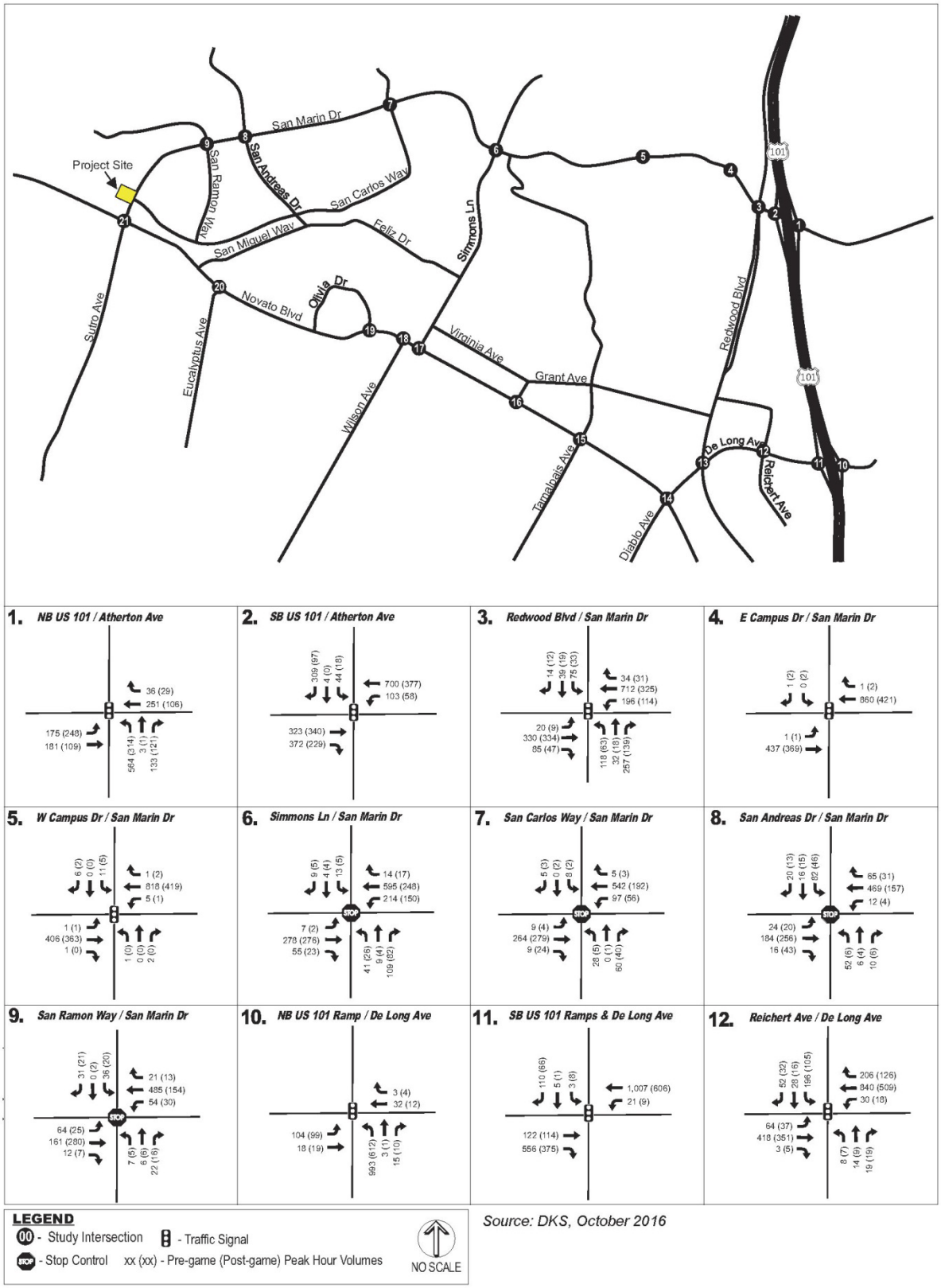
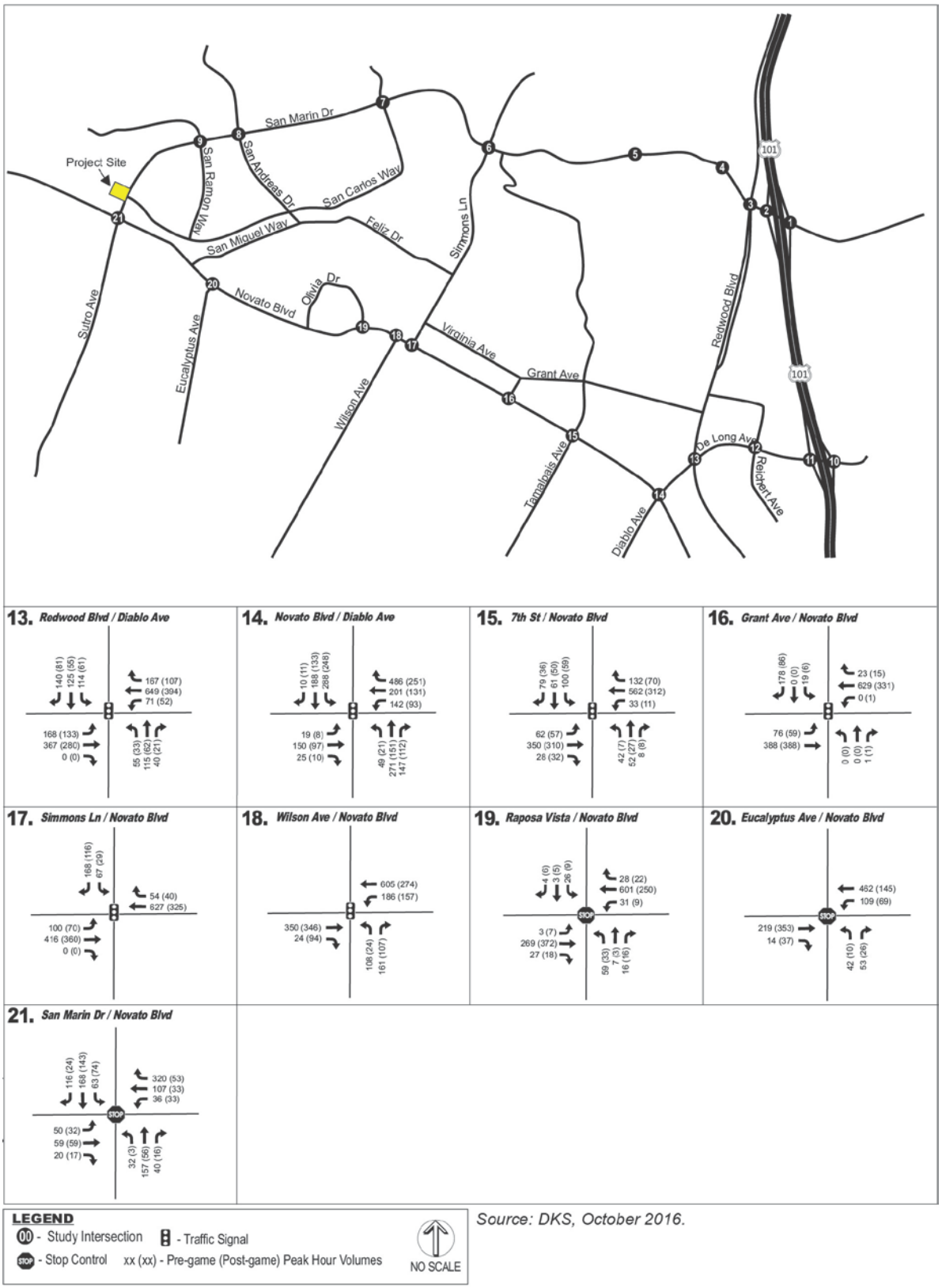


Figure 23 San Marin High School Lane Configuration with Cumulative plus Project Traffic Volumes Continued



Source: DKS, October 2016.

Table 4341 Comparison of Cumulative and Cumulative plus Project Conditions 8:00 to 10:00 PM

#	Intersections	Control[1]	~~Existing 6:00~~ -8:00- 10:00 PM Future LOS[2]	Future Del/Veh[3]	Future + Project LOS[2]	Future + Project Del/Veh[3]	Significant Impact Y/N
1	NB US 101 Ramps & Atherton Avenue	Signalized	B	18.4	D	46.8	N
2	SB US 101 Ramps & Atherton Avenue	Signalized	A	6.3	A	7.2	N
3	Redwood Boulevard. & San Marin Drive	Signalized	B	11.4	B	11.1	N
4	E. Campus Drive & San Marin Drive	Signalized	A	7.8	A	8.8	N
5	W. Campus Drive & San Marin Drive	Signalized	A	4.1	A	4.6	N
6[4]	Simmons Lane & San Marin Drive	AWSC	A	9.7	B	10.8	N
7	San Carlos Way & San Marin Drive	AWSC	A	7.7	A	8.2	N
8[4]	San Andreas Drive & San Marin Drive	AWSC	A	8.8	B	10.5	N
9	San Ramon Way & San Marin Drive	AWSC	A	7.5	A	8.4	N
10	NB US 101 Ramps & De Long Avenue	Signalized	A	8.8	A	8.8	N
11	SB US 101 Ramps & De Long Avenue	Signalized	A	5.0	A	5.0	N
12	Reichert Avenue & De Long Avenue	Signalized	A	7.7	A	7.7	N
13	Redwood Boulevard & Diablo Avenue	Signalized	B	15.0	B	15.0	N
14	Novato Boulevard & Diablo Avenue	Signalized	B	14.6	B	15.1	N
15	7th Street & Novato Boulevard	Signalized	B	11.0	B	11.7	N
16	Grant Avenue & Novato Boulevard	Signalized	A	6.1	A	5.9	N
17	Simmons Lane & Novato Boulevard	Signalized	A	7.3	A	6.6	N
18	Wilson Avenue & Novato Boulevard	Signalized	A	7.2	A	8.1	N
19[4]	Raposa Vista & Novato Boulevard	AWSC	A	9.1	B	12.2	N
20	Eucalyptus Avenue & Novato Boulevard	AWSC	A	8.2	B	11.4	N
21[4]	San Marin Drive & Novato Boulevard	AWSC	A	8.9	A	9.4	N

[1] Intersection control: signalized or all-way stop control (AWSC)

[2] Level of Service as defined in Table 35~~Table 33~~

[3] Average delay per vehicle (seconds)

[4] HCM 2010

As shown in Table 42~~Table 40~~, none of the study intersections would fall below the LOS standard D with the addition of project to future forecasted traffic during the 6:00 to 8:00 PM time period. Likewise, none of the study intersections would fall below LOS D during the 8:00 to 10:00 PM time period under cumulative plus project conditions, as shown in Table 43~~Table 41~~. As no significant impacts were found under cumulative plus project conditions, impacts would be less than significant and no mitigation measures are necessary.

MITIGATION MEASURES

No mitigation measures would be required.

SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant without mitigation.

Cumulative Impacts

Cumulative impacts are described under Impact T-2. As described under Impact T-2, cumulative traffic impacts would be less than significant.

5 Other CEQA Required Discussions

5.1 Growth Inducing Effects

State CEQA Guidelines §15126.2(d) requires a discussion of a proposed project's potential to induce growth by, for example, fostering economic or population growth, or removing an obstacle to growth. Growth does not necessarily create significant physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant adverse environmental effects. The proposed project's growth-inducing potential is therefore considered significant if growth induced by the project could result in significant physical effects in one or more environmental issue areas.

5.1.1 Economic and Population Growth

The proposed project involves adding stadium lighting at the San Marin High School football stadium. The proposed project would not include new residential uses and therefore would not directly result in population growth. The project would not increase or facilitate an increase in school enrollment and would not generate a substantial number of new jobs. Therefore, the project would not result in substantial indirect population growth. The project would generate temporary employment opportunities during lighting installation, which would primarily draw workers primarily from the existing regional work force. Therefore, the proposed project would not be growth-inducing with respect to jobs and the economy. The proposed project would not induce economic expansion to the extent that significant environmental impacts directly associated with the project's contribution would occur.

5.1.2 Removal of Obstacles to Growth

The project site is located in a fully urbanized area that is well served by existing infrastructure. As discussed in Sections XVII, *Utilities and Service Systems*, and IX, *Hydrology and Water Quality*, in the Initial Study (Appendix A), existing utilities are adequate to serve the project. No new or widened/expanded roads or expanded/improved utility infrastructure would be required. Because the project would not require the extension of new infrastructure through or to undeveloped areas or increase the potential intensity of development, project implementation would not remove an obstacle to growth.

5.2 Significant and Irreversible Environmental Effects

State CEQA Guidelines § 15126.2(b) requires that an EIR identify those significant impacts that cannot be reduced to a less than significant level with the application of mitigation measures. The implications and reasons why the project is being proposed, notwithstanding, must be described. As discussed in Section 4.5~~4.6~~, *Noise*, of the EIR, impacts resulting from crowd noise associated with nighttime events at the stadium would be significant and unavoidable. No other unavoidably significant impacts would occur. It should be noted that the significant and unavoidable impacts for noise would occur approximately 16 or fewer times per year, for not more than four hours at a time. Nonetheless, this analysis determined that those impacts would be significant and unavoidable because the identified thresholds for those issue areas do not account for the frequency of adverse effects.

The state CEQA Guidelines §15126.2(c) require a discussion of significant irreversible environmental changes which would be caused by the proposed project should it be implemented. Such significant irreversible environmental changes may include the following:

- Use of non-renewable resources during the initial and continued phases of the project which would be irreversible because a large commitment of such resources makes removal or non-use unlikely.
- Primary impacts and, particularly secondary impacts (such as highway improvement which provides access to a previously inaccessible area) which generally commit future generations to similar uses.
- Irreversible damage which may result from environmental accidents associated with the project.

Installation of lighting poles and associated electrical conduits would require building materials and energy, some of which are non-renewable resources. Consumption of these resources would occur with any development in the region and are not unique to the proposed project. The addition of new stadium lighting on the project site would irreversibly increase local demand for non-renewable energy resources in the form of electricity consumption. Additional vehicle trips associated with the proposed project would incrementally increase local traffic and regional air pollutant and greenhouse gas emissions.

As discussed above under Subsection 5.1.2, the project does not involve any roadway or utility infrastructure improvements which would generally commit future generations to similar uses.

As discussed in Section 4.6, *Transportation and Traffic*, of the EIR and in Sections XVI, *Transportation/Traffic* and VIII, *Hazards and Hazardous Materials*, of the Initial Study, Appendix A of the EIR, the project would not result in environmental accidents that may cause irreversible damage.

5.3 Energy Effects

CEQA Guidelines Appendix F requires that EIRs include a discussion of the potential energy consumption and/or conservation impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, or unnecessary consumption of energy.

The project would involve the use of energy during the construction and operational phases of the project. Energy use during the construction phase would be in the form of fuel consumption (e.g.: gasoline and diesel fuel) to operate heavy equipment, light-duty vehicles, and other machinery that may be used to install the lighting poles and public address system. In addition, temporary grid power may also be provided to any temporary construction trailers or electric construction equipment. Long-term operation of the project would require permanent grid connections for electricity to power the stadium lights and public address systems. In addition, the increase in vehicle trips associated with the project would increase fuel consumption within the area. However, the permanent stadium lighting would consist of a modern, energy efficient LED lighting system. Therefore, the proposed project would not use energy in an inefficient or wasteful manner.

6 Alternatives

6.1 Introduction

The CEQA Guidelines require that EIRs identify and evaluate a reasonable range of alternatives that are designed to reduce the significant environmental impacts of the proposed project, while still satisfying most of the basic project objectives. The CEQA Guidelines also set forth the intent and extent of alternatives analysis to be provided in an EIR.

The following discussion evaluates alternatives to the proposed project and examines the potential environmental impacts associated with each alternative. Through comparison of these alternatives to the proposed project, the relative environmental advantages and disadvantages of each are weighed and analyzed. The CEQA Guidelines require that the range of alternatives addressed in an EIR should be governed by a rule of reason. Not every conceivable alternative must be addressed, nor do infeasible alternatives need to be considered (CEQA Guidelines Section 15126.6(a)). Section 15126.6 of the CEQA Guidelines states that the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency or other plans or regulatory limitations, and jurisdictional boundaries. Section 15126.6(b) of the CEQA Guidelines states that the discussion of alternatives must focus on alternatives capable of either avoiding or substantially lessening any significant environmental effects of the project, even if the alternative would impede, to some degree, the attainment of the project objectives or would be more costly. The alternatives discussion should not consider alternatives whose implementation is remote or speculative, and the analysis of alternatives need not be presented in the same level of detail as the assessment of the proposed Project.

Based on the CEQA Guidelines, several factors need to be considered in determining the range of alternatives to be analyzed in the EIR and the level of analytical detail that should be provided for each alternative. These factors include: (1) the nature of the significant impacts of the proposed project, (2) the ability of alternatives to avoid or lessen the significant impacts associated with the proposed project, (3) the ability of the alternatives to meet the objectives of the proposed project, and (4) the feasibility of the alternatives. The analysis in this EIR shows that the proposed project would result in significant and unavoidable impacts with respect to noise at adjacent residences during varsity football games. All other impacts of the project can either be mitigated to a level of less than significant or are less than significant. The alternatives examined herein represent alternatives that could potentially reduce or avoid the significant and less than significant impacts associated with implementation of the proposed project.

As required by Section 15126.6 of the CEQA Guidelines, this section of the EIR examines a range of reasonable alternatives to the proposed project. The following alternatives are evaluated in this EIR:

- Alternative 1: No Project
- Alternative 2: Stadium Lighting at Novato High School
- Alternative 3: Portable Lighting Systems

<u>One alternative that was rejected as infeasible in the Draft EIR is presented here in further detail for informational purposes in response to public comments received on the Draft EIR. The College of Marin Indian Valley Campus (IVC) Existing Fields alternative is now presented as Alternative 4 to provide additional detail about the potential impacts of that alternative. However, the conclusion in the Draft EIR that the IVC Existing Fields alternative would be infeasible remains valid.</u>

This section also includes a discussion of the alternatives considered but rejected and the "environmentally superior alternative" among the alternatives analyzed.

As indicated above, project alternatives should feasibly be able to attain "most of the basic objectives of the project" (Section 15126.6(a) of the State CEQA Guidelines), even though implementation of the project alternatives might, to some degree, impede the attainment of those objectives or be more costly (Section 15126.6(b) of the State CEQA Guidelines). The following are the project objectives as described in Section 2.0, Project Description.

1 Provide extended availability of the athletic fields to improve academic performance by minimizing early class dismissal and missed instructional time for student athletes.
2 Allow for the scheduling of games at times when students, parents, and community members can more easily attend the events, which would increase school spirit and increase revenue from ticket purchases.
3 Provide nighttime opportunities for students to gather to cheer on their team offering an alternative to going to parties or other unhealthy recreational activities.
4 Improve athlete safety by providing superior lighting conditions during evening practices and sports events.
5 Improve safety by minimizing incompatible uses from sharing the field (e.g.: lacrosse teams and track/field teams practicing at the same time means that lacrosse balls may hit runners on the track).
6 Improve the public address system to focus and contain sound within the stadium.

6.2 Alternatives Considered but Rejected as Infeasible

Pursuant to CEQA Guidelines §15126.6(c), the District considered several alternative off-site facilities to host nighttime events and practices. These alternate sites were rejected as infeasible during the project's scoping process. This section discusses the alternative sites and the reasons the District decided not to carry them forward for further environmental analysis.

All of the off-site alternatives would require student athletes, coaches, and support staff to be transported to and from the site for games and practices. The off-site alternatives range in distance from adjacent to San Marin High School (O'Hair Park) to approximately seven miles away (Hamilton Site). With the exception of O'Hair Park which is adjacent to the school, the use of alternative sites for games and practices would necessitate cars and buses to transport student athletics, coaches, and support staff from San Marin High School to the alternative site. Therefore, the rejected alternatives would result in additional traffic, traffic noise, and mobile air pollution and greenhouse gas (GHG) emissions compared to the proposed project. For this reason and the additional reasons listed below, these alternative sites were considered but rejected as infeasible.

Figure 24 and Figure 25 show the locations of the alternative sites considered but rejected.

a. *San Andreas Site*. NUSD owns the San Andreas site, which is approximately 20 acres located in northern Novato just off San Marin drive. The site is currently undeveloped and ungraded and is surrounded by residential uses. The site is not connected to the electrical grid or to any utilities such as water or wastewater. In order to support nighttime games, events, and practices, the site would need full development of a stadium and parking as well as infrastructure improvements and utility connections. Development of a stadium would result in construction-related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. Construction of a full stadium rather than the addition of lights to an existing stadium would result in a longer construction period with additional heavy construction equipment. Therefore, construction-related impacts would be worse than the proposed project. In addition, this site is adjacent to residential uses; therefore, similar crowd and public address (PA) system noise impacts as the proposed project would occur. This alternative likely would not eliminate the unavoidable noise impact during games and events. Further, development of this site would be cost-prohibitive.

Figure 24 Map of Alternative Sites Considered but Rejected

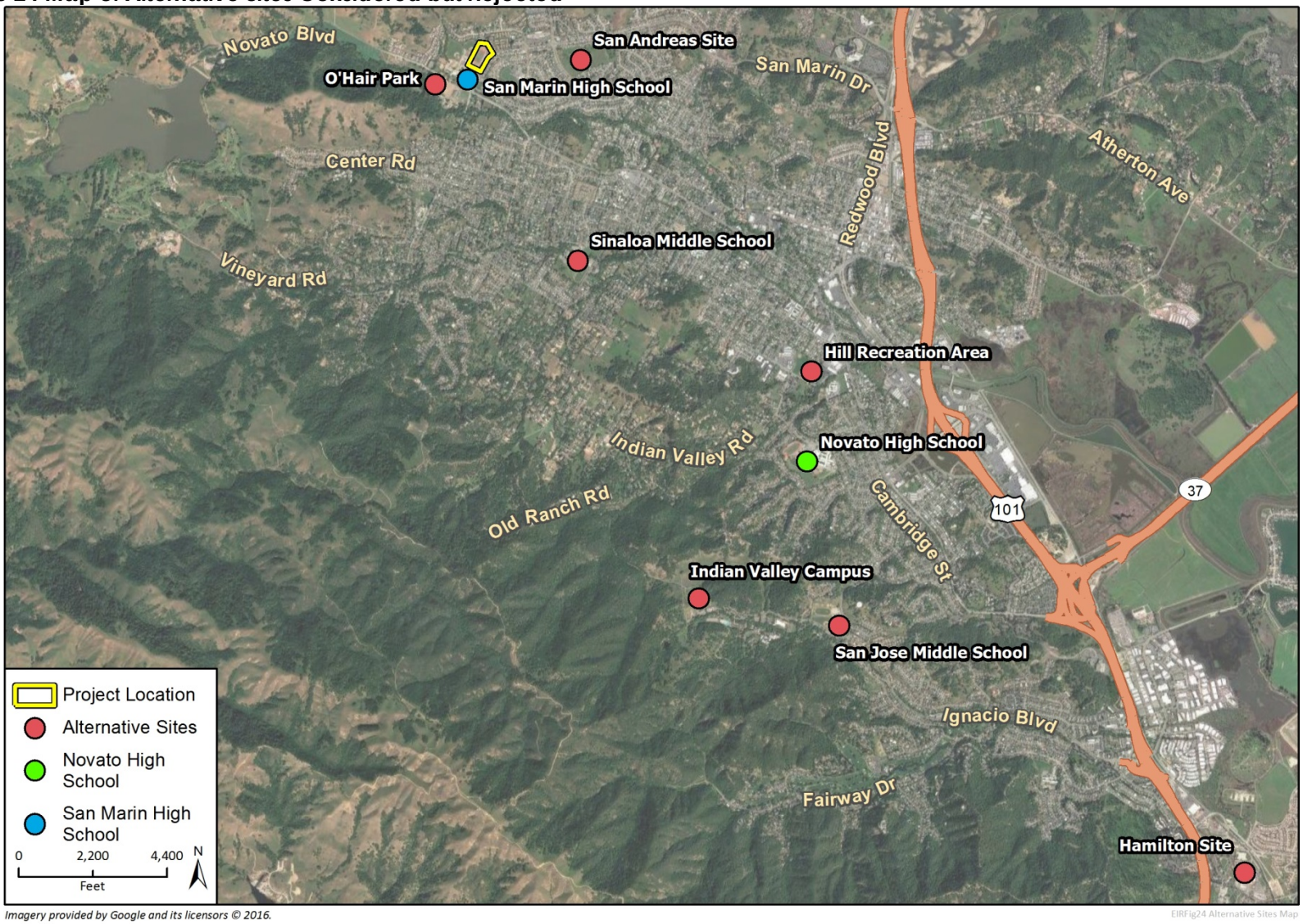


Figure 25 Map of College of Marin Indian Valley Campus Alternative Sites

b. *Hamilton Site*. The Hamilton site, known as Parcel 1A and owned by NUSD, is approximately nine acres in size located in south Novato close to Hamilton K-8 School and Novato Charter School. The site is situated on a former Air Force Base. Although there are no structures on the site, the concrete foundations from former buildings remain. This site would also require full development of a stadium and parking as well as infrastructure improvements, utility connections, and significant roadway improvements for access to the site. Development of a stadium would result in construction related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. Construction of a full stadium rather than the addition of lights to an existing stadium would result in a longer construction period with additional heavy construction equipment. Therefore, construction-related impacts would be worse than the proposed project. In addition, since the site was a former military installation, significant soil and groundwater contamination may exist. Therefore, this alternative site would have additional impacts related to hazards and hazardous materials compared to the proposed project. Further, this site is adjacent to residential uses; therefore, similar crowd and PA system noise impacts as the proposed project would occur. This alternative likely would not eliminate the unavoidable noise impact during varsity football games. Lastly, development of this site would be cost-prohibitive.

c. *Sinaloa Middle School or San Jose Middle School*: These middle schools are within the District. Both schools currently have athletic fields and tracks, but the fields are not conducive to holding large events or games since they do not have bleachers, concessions, or restrooms. The District is planning on upgrading the fields at both schools by converting them from grass to artificial turf and upgrading the tracks to regulation size, but no additional facilities, lights, or a PA system are planned at either school. Adding bleachers, concessions, restrooms, lighting and a PA system at either school would be cost prohibitive. Further, both sites are adjacent to residential uses. At San Jose Middle School residences are located approximately 100 feet west of the existing track and at Sinaloa Middle School residences are located approximately 25 feet south of the existing track. Therefore, for both sites, similar crowd and PA system noise impacts as the proposed project would occur. These alternative sites likely would not eliminate the unavoidable noise impact during varsity football games.

~~d. *College of Marin Indian Valley Campus (IVC) existing fields*: The campus contains two grass athletic fields which are configured for softball and soccer. The fields contain lighting but the lighting is configured to accommodate softball games. Therefore, the fields and lighting system would need to be reconfigured to accommodate football. The fields do not contain a track and could not accommodate track practices or a track meet. In addition, the field would require drainage improvements which would necessitate grading. Therefore, construction-related impacts such as traffic, noise, air pollution, and GHG emissions would be greater than those of the proposed project. No residences are located adjacent to these fields; therefore, the significant and unavoidable operational noise impact would be eliminated with use of this site. However, both the College of Marin and the City of Novato use these fields and would not accommodate NUSD's proposed usage. The District would have to enter into a three-way agreement with the college and city to use the fields. The District's schedule may not be accommodated at this facility.~~

d. *College of Marin IVC Lot 1:* This site would require full development of a stadium as well as infrastructure improvements and utility connections. This site is located next to a major roadway, Ignacio Boulevard, and parking; therefore the site has adequate site access and would require minimal new parking. Due to the topography of this site, extensive grading would be required. Development of a stadium would result in construction related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. The nearest sensitive receptors are the residences approximately 800 feet east of the site. Development of this site is not within the Campus Facilities Master Plan; therefore additional environmental analysis under CEQA would be required. Development of a stadium at this location would be cost prohibitive.

e. *College of Marin IVC Lot 2:* This site would require full development of a stadium and parking as well as infrastructure improvements, roadway improvements, and utility connections. Due to the topography of this site, extensive grading would be required, although less grading would be required than the Lot 1 site. Development of a stadium would result in construction related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. However, there are no residential uses within ¼ mile of this site. Development of a stadium at this location would be cost prohibitive.

f. *Hill Recreation Area*: Development of a stadium would result in construction related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. This site is surrounded by sensitive receptors including a senior center, a high school, and residences. Plans for the site are currently being developed through an active community design planning process. During the process, it was decided that the site will not include lighted athletic fields; however, security and pathway lighting would be provided. Development of a stadium at this site would not be consistent with the outcome of the community design planning process. In addition, development of a stadium at this location would be cost prohibitive.

g. *O'Hair Park:* The City of Novato owns O'Hair Park, which is located adjacent to San Marin High School. Current uses include a lease for an equestrian operation with Morningstar Farm, the City's dog park, as well as public trails and open space. Other than the developed areas for horses and dogs, this park remains predominantly undeveloped with trails and open space. The current lease with Morningstar Farm is in force through October 31, 2022, or can be terminated with 18 months advance notice. Therefore, if the lease with Morningstar Farm was ended, the site could be developed with a stadium. However, this site would require full development of a stadium and parking as well as infrastructure improvements and utility connections which would result in construction related impacts such as air pollution and greenhouse gas emissions, noise, and construction traffic. In addition, Novato Creek runs through the middle of the site. Development of the site with a stadium may result in water quality impacts or impacts to sensitive riparian species. Further, development of a stadium at this location would be cost prohibitive.

h. *Additional On-site Turf Fields*: The District plans to install an additional turf practice field at San Marin High School. While an additional turf practice field will help with the number or practice locations it does not solve the larger issue of missed class time. Games times will still need to start at 3:15. Also, in the winter there are four athletic teams that need practice fields. Even with two practice fields, there would not be enough daylight hours in the winter to accommodate four athletic teams. In addition, during overlaps between Fall/winter and winter/spring sports seasons, there can be up to 7 teams that need a place to practice. Finally, the District is considering a later school-day start time, which would reduce available daylight hours for sports practice even further.

i. *Reduced Number of Events with Lighting*: The District considered a reduction in the number of lighted events compared to the proposed schedule of events. However, as described above under the Additional On-site Turf Fields alternative, the proposed schedule of events is the minimum number of lighted events necessary to accommodate athletic practice needs and achieve the project objectives.

~~6.3~~ Alternative 1: No Project ~~Objective~~

6.3.1 Description

This alternative assumes that the proposed project is not implemented and the project site remains in its current condition. Currently, there are no stadium lights and the public address (PA) system does not focus sound on the field.

6.3.2 Impact Analysis

The No Project alternative would involve no changes to the physical environment and thus would have no environmental effects. As such, air pollution emissions, greenhouse gas (GHG) emissions, and noise associated with construction would be avoided because no lighting system would be installed. In addition, operational impacts associated with light trespass and glare, air pollution and GHG emissions, nighttime PA system and crowd noise, and nighttime event traffic would not occur. The No Project Alternative would eliminate the proposed project's significant and unavoidable noise impact. No mitigation measures would be required for the No Project alternative. Overall impacts would be lower than those of the proposed project since no change to environmental conditions would occur.

The No Project Alternative would not meet any of the objectives of the proposed project. This alternative would not extend play time on the fields and minimize missed instructional time (Objective 1), increase school and community participation (Objective 2), provide nighttime recreational activities for students (Objective 3), improve safety (Objectives 4 and 5), or improve the PA system (Objective 6).

6.4 Alternative 2: Stadium Lighting at Novato High School

6.4.1 Description

This alternative would involve the installation of new lighting at the Novato High School stadium instead of San Marin High School. This stadium would host nighttime events for both Novato and San Marin high schools. The lighting equipment would be similar (height, configuration, type, etc.) to the proposed project. The existing PA system at the school would be updated to focus sound to the field. Like the proposed project, some Novato High School practices and games that currently occur at the field would shift to evening hours. In addition, Novato High School would host some San Marin High School evening events and games. However, the overall number of evening events (e.g.: 16 football games) would remain the same as with the proposed project.

6.4.2 Impact Analysis

a. Aesthetics

Because this alternative would involve similar lighting system and schedule as the proposed project in a neighborhood that is also residential, it would result in similar impacts as the proposed project with respect to views to, through, and from the stadium; change in visual character; and light, glare, and sky glow. However, impacts would be shifted from San Marin High School to Novato High School. At San Marin High School, the nearest residences are 120 feet away. At Novato High School, the nearest residences are adjacent to the stadium less than 25 feet away. Since residences are closer to the Novato High School stadium compared to the San Marin High School stadium, light and glare impacts could be greater under this alternative. Nonetheless, with mitigation measures similar to those in this EIR (AES 3~~1~~and AES-4~~2~~) to design the lighting system to reduce light trespass and glare at these residences, impacts are expected to be less than significant. Under this alternative, aesthetic impacts would be generally similar to the proposed project and would remain less than significant or less than significant with mitigation. Mitigation measures related to light and glare would still apply.

b. Air Quality

This alternative would involve the permanent installation of lighting fixtures at Novato High School. The amount and duration of construction would be similar or the same under this alternative. Therefore, construction-related emissions would be similar to or the same compared to the proposed project.

Mobile emissions associated with transportation between San Marin High School and Novato High School would be slightly increased. Energy-related operational emissions associated with new lighting systems would be the same as the proposed project. Overall, operational emissions levels would be slightly higher than levels associated with the proposed project. Nonetheless, like the proposed project, impacts would be less than significant.

c. Cultural Resources

Similar to the proposed project, this alternative would involve some subsurface work to install lighting poles. Further research would be needed to determine the likelihood of discovering cultural, paleontological, or tribal resources or human remains at Novato High School. Nonetheless, in order to avoid potential impacts to cultural resources the mitigation measures outlined in Section 4.4, Cultural Resources, would continue to apply. Impacts would be the same as the proposed project and would remain significant but mitigable.

d. Greenhouse Gas Emissions

This alternative would involve the permanent installation of lighting fixtures at Novato High School. The amount and duration of construction would be similar or the same under this alternative. Therefore, construction-related GHG emissions would be similar to or the same compared to the proposed project. Mobile GHG emissions associated with transportation between San Marin High School and Novato High School would be slightly increased. Energy-related GHG emissions associated with new lighting systems would be the same as the proposed project. Overall, operational emissions levels would be slightly higher than levels associated with the proposed project. However, like the proposed project, impacts would be less than significant.

e. Noise

For the proposed project, the nearest sensitive noise receptors are the classrooms approximately 100 feet from the stadium track and the residences approximately 120 feet from the stadium track. At the Novato High School alternative site, residences are located immediately adjacent to the northwestern boundary of the existing stadium. Therefore, construction-related noise impacts would be greater compared to the proposed project. Additional mitigation measures may be needed related to construction noise for this alternative.

The stadium at Novato High School currently has a PA system but it is only used for daytime events since the stadium has no lighting. Under this alternative, the PA system use would shift to nighttime for night games and additional crowd noise would occur during evening hours. At Novato High School, sensitive noise receptors (residences) are located immediately adjacent to the stadium. Therefore, crowd and PA noise impacts would be greater than those of the proposed project. A mitigation measure similar to Mitigation Measure N-2~~1~~ required for the proposed project would apply to this alternative. The significant and unavoidable noise impact would remain.

This alternative would also involve additional traffic noise associated with trips to transport San Marin High School transport student athletes, coaches, and support staff to Novato High School for games. Traffic noise impacts would be increased compared to the proposed project but would be expected to remain less than significant.

f. Transportation/Traffic

This alternative would involve additional roadway traffic to transport student athletes, coaches, and support staff to Novato High School for games. Impacts would be increased compared to the proposed project but would be expected to remain less than significant.

6.5 Alternative 3: Portable Lighting

6.5.1 Description

Under this alternative, stadium lighting for night games at San Marin High School would be provided by portable lighting systems that are powered by diesel generators. The portable lighting systems would only be used for nighttime football, soccer, track, and lacrosse games. It is assumed that portable lighting would not remain in place but would be installed prior to games and removed after games or the following morning. Practices would continue to meet during daytime hours and would not use the portable lighting system.

6.5.2 Impact Analysis

a. Aesthetics

This alternative would not involve the permanent addition of stadium lighting. However, this alternative would involve the use of portable light fixtures. Therefore, this alternative would incrementally alter views of and through the stadium when the fixtures are in use. However, because lighting systems would not be permanent but would be used temporarily and only occasionally, views would be affected to a lesser extent than the proposed project. This alternative would not substantially alter daytime aesthetic conditions and visual character of the stadium since portable fixtures would only be used for nighttime events. Depending on type of fixtures used, portable lighting may be more or less efficient than the proposed permanent light fixtures. Therefore, light and glare impacts may be better or worse than the proposed project. Since this alternative would only involve lighting for nighttime events and not practices, potential light and glare impacts would be less frequent than the proposed project. The mitigation measures required for the proposed project (AES-3~~1~~ and AES-4~~2~~) would not apply since no permanent lighting systems are proposed. Like the proposed project, this alternative would not substantially increase sky glow. Therefore, overall, aesthetic impacts associated with this project would be less than significant and would be slightly reduced compared to the proposed project.

b. Air Quality

This alternative would not involve the permanent installation of lighting fixtures. This alternative would involve trucks or light machinery to set up and remove the portable fixtures, but emissions associated with installation would be minor. Therefore, construction-related emissions would be reduced compared to the proposed project. However, this alternative would involve diesel-powered portable lighting. Operational diesel emissions would be increased compared to the proposed project. It is anticipated that overall air pollution emissions associated with diesel generators would be more than emissions associated with energy use to power permanent energy-efficient lighting fixtures. In addition, nearby sensitive receptors may be affected by diesel exhaust and odor emissions. Overall, air quality impacts would be increased compared to the proposed project under this alternative.

c. Cultural Resources

This alternative would not involve ground disturbing activities since the lighting poles would not be installed. Therefore, no impacts to cultural resources would occur. The mitigation measures outlined in Section 4.3, *Cultural Resources*, would not apply. Impacts would be reduced compared to the proposed project.

d. Greenhouse Gas Emissions

This alternative would not involve the permanent installation of lighting fixtures. This alternative would involve trucks or light machinery to set up and remove the portable fixtures, but emissions associated with installation would be minor. Therefore, construction-related GHG emissions would be reduced compared to the proposed project. However, this alternative would involve diesel-powered portable lighting. GHG emissions associated with diesel generators would be increased compared to the proposed project. It is anticipated that overall GHG emissions associated with diesel generators would be more than GHG-emissions associated with energy use to power permanent energy-efficient lighting fixtures. Overall, GHG impacts would be increased compared to the proposed project under this alternative.

e. Noise

Since this alternative would not involve the permanent installation of light fixtures, construction noise would be reduced compared to the proposed project. However, this alternative would involve minor infrequent noise associated with installing and removing the portable fixtures. Like the proposed project, construction noise impacts would be less than significant.

This alternative would still involve a shift of athletic games to the evening hours, though unlike the proposed project this alternative would not shift practices to the evening hours. This alternative would not involve improvements to the PA system that would reduce PA system noise at nearby residences; therefore, PA system noise impacts on nearby receptors would be greater than the proposed project. In addition, this alternative would still involve nighttime varsity football games; therefore, the significant and unavoidable noise impact from crowd noise would remain. The diesel-generators would also produce noise not associated with the proposed project. Overall, noise impacts would be greater under this alternative than for the proposed project. Mitigation measures similar to those required for the proposed project (~~N-1 and~~N-2) would still apply.

f. Transportation/Traffic

Like the proposed project, this alternative would result in a shift of some stadium activities, such as varsity football games to nighttime instead of daytime. Therefore, the traffic impacts associated with evening football games for the proposed project would still occur with this alternative. Impacts would be generally the same as the proposed project and would be less than significant.

6.6 Alternative 4: College of Marin Indian Valley Campus (IVC) Existing Fields

6.6.1 Description

The Indian Valley Campus (IVC) contains two grass athletic fields on the western portion of the campus which are configured for softball and soccer. The fields contain lighting but the lighting is configured to accommodate softball games. Therefore, the fields and lighting system would need to be reconfigured to accommodate football. The field house, restrooms, and bleachers would need to be upgraded to accommodate larger crowds associated with varsity football games. Parking and pathways may need to be improved to meet ADA standards. The fields do not contain a track and could not accommodate track practices or a track meet. In addition, the field would require drainage improvements which would necessitate grading. The fields are surrounded on three sides by open space to the west, north, and east. The Indian Valley Campus Organic Farm and Garden borders the fields to the southwest. Campus buildings, including maintenance facilities, border the fields to the southeast. The nearest sensitive

receptors to the field are classroom facilities approximately 1,000 feet to the southeast and residences located on a ridge approximately 1,300 feet to the north-northeast.

Both the College of Marin and the City of Novato use these fields and would not accommodate NUSD's proposed usage. The College of Marin owns the IVC site, and has entered into a 40-year agreement with the City of Novato. That agreement, which governs use of the fields, will be up for renewal in the year 2036. The District would have to enter into a three-way agreement with the college and city to use the fields. Both the City of Novato and the College of Marin have stated that it would be difficult to reach an agreement between all three parties. Based on the Agreement in place between the City of Novato and Marin Community College District regarding Indian Valley Campus athletic fields, the Marin Community College District has first priority for use of the athletic fields between the hours of 8:00 AM and 3:00 PM on Monday, Wednesday, and Friday and between the hours of 8:00 AM and 5:00 PM on Tuesdays and Thursdays. The City has priority for use of the athletic fields between the hours of 3:00 PM and 10:00 PM on Monday, Wednesday, and Friday; between the hours of 5:00 PM and 10:00 PM on Tuesday and Thursday; between the hours o 9:00 AM and 5:00 PM on Saturdays; and between the hours of 12:00 PM and 5:00 PM on Sundays and holidays. These times correspond with many of the times that San Marin High School students would also use the fields for practices and games. Additionally, the fields are closed November through January for maintenance and to reduce the damage to the natural turf during the rainy season. This closure would impact approximately 66 events that are planned to occur under the proposed project during this time period including both practices and games. Furthermore, there is currently no room to add a new football field under the lights without reducing the space for the existing programs or eliminating many community uses all together. The City of Novato has indicated that there is not room to add a new football field at the IVC site without reducing space for existing City programs or eliminating many community uses at the site altogether. The City does not support use of the IVC site for San Marin High School athletic events (City of Novato, 2017). Therefore, the District's schedule would not be accommodated at this facility.

6.6.2 Impact Analysis

a. Aesthetics

Because this alternative would involve a similar lighting system and schedule as the proposed project, it would result in similar impacts as the proposed project with respect to views to, through, and from the stadium; change in visual character; and light, glare, and sky glow. However, impacts would be shifted from San Marin High School to the IVC. At San Marin High School, the nearest residences are approximately 120 feet away. At the IVC, the nearest residences are located approximately 1,300 feet to the north-northwest on a ridge above the stadium. Since residences are further from the IVC field compared to the San Marin High School stadium, the severity of light and glare impacts on nearby sensitive receptors would be reduced under this alternative compared to the proposed project.

Unlike the stadium at San Marin High School, the IVC fields border directly on open space, and therefore the impact of implementation of this project on the visual character of the surrounding area and ambient lighting levels may be slightly increased.

Nonetheless, with implementation of mitigation measures similar to those contained in Section 4.1, *Aesthetics,* (AES-3 and AES-4) to design the lighting system to reduce light trespass and glare at nearby residences, impacts are expected to be less than significant. Under this alternative, aesthetic impacts would be slightly reduced when compared to proposed project and would remain less than significant or less than significant with mitigation. Mitigation measures related to light and glare would still apply.

b. Air Quality

This alternative would involve the permanent installation of lighting fixtures at the IVC existing fields. The amount and duration of construction for the lighting component of the project would be the same under this alternative. However, the grading associated with the drainage improvements would be in addition to any excavation or grading associated with the lighting component of the proposed project. Additional construction compared to the proposed project would be required for this alternative (such as improved restrooms, an improved field house, new bleachers, and ADA-compliant parking and pathways). Therefore construction-related emissions would be slightly higher compared to the proposed project. Mobile emissions associated with transportation between San Marin High School and the IVC would also be slightly increased. Energy-related operational emissions associated with new lighting systems would be similar to or the same as the proposed project. Overall, operational emissions levels would be slightly higher than levels associated with the proposed project. Nonetheless, similar to the proposed project, impacts would be less than significant.

c. Cultural Resources

Similar to the proposed project, this alternative would involve some subsurface work to install lighting poles. Further research would be needed to determine the likelihood of discovering cultural, paleontological, or tribal resources or human remains at the IVC. Nonetheless, in order to avoid potential impacts to cultural resources the mitigation measures outlined in Section 4.4, *Cultural Resources*, would continue to apply. Impacts would be the same as the proposed project and would remain significant but mitigable.

d. Greenhouse Gas Emissions

This alternative would involve the permanent installation of lighting fixtures at the IVC existing fields. The amount and duration of construction for the lighting component of the project would be the same under this alternative. However, the grading associated with the drainage improvements would be in addition to any excavation or grading associated with the lighting component of the proposed project. Additional construction compared to the proposed project would be required for this alternative (such as improved restrooms, an improved field house, new bleachers, and ADA-compliant parking and pathways). Therefore, construction-related GHG emissions would be slightly increased compared to the proposed project. Mobile GHG emissions associated with transportation between San Marin High School and the IVC would also be slightly increased. Energy-related GHG emissions associated with new lighting systems would be similar to or the same as the proposed project. Overall, operational emissions levels would be slightly higher than levels associated with the proposed project. However, like the proposed project, impacts would be less than significant.

e. Noise

For the proposed project, the nearest sensitive noise receptors are the classrooms approximately 100 feet from the stadium track and the residences approximately 120 feet from the stadium track. At the IVC alternative site, residences are located approximately 1,300 feet from the northeast boundary of the northernmost existing softball field. Construction activities, including the grading associated with the drainage improvements and construction of improved restrooms, an improved field house, new bleachers, and ADA-compliant parking and pathways would be in addition to any excavation or grading associated with the lighting component of the proposed project. Overall construction noise would be slightly greater compared to the proposed project. However, the nearest sensitive receptors are classrooms and residences located approximately 1,000 feet and 1,300 feet from the IVC field site, respectively. Due to the attenuation of noise over distance, construction noise for this alternative would

be lower at the nearest sensitive receptors compared to the proposed project. Therefore, construction-related noise impacts would be reduced in comparison to the proposed project.

The IVC fields do not currently have a PA system and a new system would be installed under this alternative. Crowd noise from attendees at athletic events would be similar compared to the proposed project. This alternative would also involve additional traffic noise associated with trips to transport San Marin High School student athletes, coaches, and support staff to IVC for practices and games. Traffic noise impacts would be increased compared to the proposed project but would be expected to remain less than significant. Due to the distance between the fields and nearby sensitive receptors (approximately 1,000 feet or greater), operational noise impacts would be reduced compared to the proposed project. A mitigation measure similar to Mitigation Measure N-2 required for the proposed project may be required for this alternative in order to reduce potential impacts associated with a new PA system. Because of the distance between the fields and the nearest sensitive receptors, operational noise levels associated with this alternative most likely would be below identified thresholds. This alternative likely would eliminate the significant and unavoidable noise impact associated with the proposed project.

f. Transportation/Traffic

This alternative would involve additional roadway traffic to transport student athletes, coaches, and support staff to IVC for games and practices. Impacts would be increased compared to the proposed project but would be expected to remain less than significant.

~~6.6~~ 6.7 Environmentally Superior Alternative

~~Table 6-1~~ Table 44 compares the physical impacts for each of the alternatives to the physical impacts of the proposed project. The No Project Alternative (Alternative 1) would be the overall environmentally superior alternative since it would avoid all project impacts. However, the No Project Alternative would not achieve the basic project objectives as stated in Section 2.0, *Project Description*.

Among the development options, Alternative 3 (Portable Lighting System) would ~~have reduced~~reduce aesthetic and cultural impacts compared to the proposed project but would increase noise, air quality, and GHG impacts compared to the proposed project. Alternative 3 would not eliminate the unavoidably significant noise impact. Alternative 2 (Novato High School Lighting) would have similar aesthetic, air quality, and GHG impacts compared to the proposed project but would shift these impacts to Novato High School instead of San Marin High School. Alternative 2 would also increase traffic compared to the proposed project; but impacts are expected to remain less than significant. Alternative 2 would not eliminate the unavoidably significant noise impact but would shift it to Novato High School. Overall, Alternative 2 is considered the environmentally superior alternative. However, since Alternative 2 would not involve the installation of stadium lighting at San Marin High School, it would not meet ~~any~~most of the basic project objectives due to the fact that demand for field time from both Novato High School and San Marin High School combined would exceed the lighted field availability. It should be noted that Alternative 4 (COM IVC Existing Fields) would eliminate the significant and unavoidable noise impact associated with the proposed project and would be considered the environmentally superior alternative. However, as described above, this alternative would be infeasible due to the unavailability of the site for purchase or lease by the District.

Table 4442 Impact Comparison of Alternatives

Issue	Proposed Project Impact Classification	Alternative 1: No Project	Alternative 2: Novato High School Lighting	Alternative 3: Portable Lighting System	Alternative 4: COM IVC Existing Fields
Aesthetics	II	+	=	+	±
Air Quality	II	+	=	-	-
Cultural Resources	II	+	+/=	-/+	=
Greenhouse Gas Emissions	III	+	=	-	-
Noise	I	+	-	-	±
Transportation/Traffic	II	+	-	=	-

+ Superior to the proposed project (reduced level of impact)
- Inferior to the proposed project (increased level of impact)
= Similar level of impact to the proposed project

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