






CEQA Manual

City of Irvine

VOLUME II. TECHNICAL GUIDELINES

PREPARED BY: CITY OF IRVINE

April 2020

IRVINE CEQA MANUAL

VOLUME II – TECHNICAL GUIDELINES

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1. Introduction

1.1 FRAMEWORK/PURPOSE OF THE CEQA GUIDELINES FOR IRVINE

Volume II of the Irvine California Environmental Quality Act (CEQA) Manual (Irvine CEQA Manual) contains the Irvine CEQA Guidelines. The City may modify these guidelines in the event of scientific discovery, changes in analysis methodologies or tools, alterations in factual data, or project-specific factors that may impact the applicability of a guideline.

1.1.1 Irvine CEQA Guidelines

The City's CEQA guidelines provide a consistent framework and reference from which to evaluate and mitigate environmental impacts of projects in the City. The City of Irvine CEQA Guidelines consolidate applicable City, regional, state, and federal regulations; existing procedures; and policies that provide the basis for environmental review pursuant to CEQA. The Irvine CEQA Guidelines are designed to:

- Ensure the quality, accuracy, and completeness of environmental documents prepared by the City and/or its consultants, or submitted to the City for review.
- Provide a framework for consistent review of applicable projects for which the City is the lead agency.
- Establish a uniform, consistent approach for the City's environmental review process.

1.1.2 How to Use Irvine's CEQA Guidelines

The Irvine CEQA Guidelines are divided into chapters based on the environmental topics in Appendix G of the State CEQA Guidelines, and each chapter provides a list of the Initial Study checklist questions in Appendix G of the State CEQA Guidelines. Additional checklist questions are incorporated where applicable, and each chapter also provides guidance for evaluating impacts and their significance, including:

- General approach for environmental analysis
- Screening criteria (if applicable)[1]
- Methodology

The Irvine CEQA Guidelines are intended to give preparers of environmental documents a consistent, logical progression of analysis, from background information, applicable regulations, sources of information, and significance guidelines, to the potential impacts resulting from implementation of the project and potential mitigation measures. However, because each case has its own issues and needs, the

[1] "Screening" is a method of determining types of projects, size of projects, or characteristics of projects that clearly do not result in significant environmental impacts. A project that is less than or meets the screening criteria would be considered to have no impact or less than significant impact. Projects that exceed the screening criteria require more detailed analysis in order to determine the level of significance. A project that exceeds the screening criteria could still have less than significant impacts if the more detailed analysis indicates that impacts are less than significant.

format/content of the environmental analysis may need to be tailored to the unique circumstances of each project. Pursuant to § 15064(b) of the State CEQA Guidelines:

> The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on factual and scientific data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.

The Irvine CEQA Guidelines are a compilation of existing information and practices and do not introduce new evaluation methods.

1.2 GENERAL APPROACH FOR ENVIRONMENTAL ANALYSIS

Once a proposed activity is determined by the City to be a "discretionary project" under CEQA, and ineligible for either a statutory or categorical exemption (see Chapter 2, *Environmental Review Process*), the environmental analysis process begins. That process, whether it leads to a Negative Declaration (ND), Mitigated Negative Declaration (MND), or Environmental Impact Report (EIR),[2] must involve a comprehensive and consistent approach to evaluating the potential impacts of a project.

The majority of CEQA documents in the City of Irvine follows the *tiering* style of analysis. Tiering refers to using the analysis of general matters from a broader EIR (such as a general plan EIR, program EIR, or master EIR) with later EIRs and NDs on narrower projects. (State CEQA Guidelines § 15152). In Irvine, a program EIR is prepared for a planning area that covers all the environmental impacts of the actions related to the development of the area. It does not need to go into the details for future projects when the details are not known. However, tiering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later, tier EIR or negative declaration (State CEQA Guidelines § 15152).

When specific projects in the planning area are proposed, they may rely on the program EIR for broad analysis and the EIR for such a project only needs to address potentially significant impacts that were not adequately addressed in the program EIR.

No matter what type of environmental document is prepared for a project, the general approach for determining impacts is the same. Below is a summary of the City's general approach to environmental analysis. Most of the topical chapters of this manual use this approach to describe how to determine significance. The flow chart on Figure 1-1, *General Approach for Determining Significance*, provides the six main steps for environmental analysis discussed in this manual. Because of their more technical approach, air quality, greenhouse gas emissions, noise, and transportation provide a more detailed discussion for determining significance based on significance criteria that have been adopted by the City and applicable reviewing agencies. Reference to this flow chart is made in each environmental topic chapter of this manual.

1.2.1 Step 1: Determine the Existing Conditions

The **onsite** and **surrounding** site conditions existing at the time of the publication of a notice of preparation (or, if no notice of preparation is published, at the time the environmental review begins) normally provide

[2] May also include an Addendum, a Supplement to an EIR, or Subsequent EIR.

a baseline from which project impacts can be determined. To determine the existing site conditions, the following questions can be asked:

- What land uses are currently onsite?
- What are the surrounding land uses?
- What are the topography, vegetation type, and natural community compositions?
- What are the general plan land use and zoning designations?
- What is the existing population and/or employees?

In addition to these questions, the analysis for each environmental topical section should include a context-specific analysis of existing environmental conditions. For example, in the noise section, the existing ambient noise environment should be considered. Existing traffic noise levels and noise from non-transportation (stationary) noise sources onsite and in the project vicinity should be documented. Similar context-specific questions would be posed for each environmental topic section.

1.2.2 Step 2: Project Impacts

The project description should clearly lay out the components of all phases of the proposed project so that the following project impacts, if any, can be determined:

- Short-term (construction) and long-term (project use) impacts
- Physical and operational impacts
- Project-related and cumulative impacts

A description of project characteristics should be based on the following questions, among others:

- What are the proposed land uses?
- What would the size of the development be?
- What construction activities would be performed? Would there be demolition or grading? How long would construction last?
- How much vegetation would be removed?
- What are the building characteristics? Massing? Scale? Lighting?
- What would the hours of operation be?
- How many people (workers/residents) would be on the project site during operation?
- Are infrastructure improvements necessary (roadways, utilities, etc.)?

The City has adopted the initial study checklist questions from Appendix G of the State CEQA Guidelines as significance thresholds for each environmental category. Thresholds serve as the “measuring sticks” against which the significance of the project’s environmental impacts will be determined. Thresholds of significance, as defined in § 15064.7(a) of the State CEQA Guidelines, may assist lead agencies in

determining whether a project could cause a significant impact. When using a threshold, the impact analysis should briefly explain how compliance with the threshold means that the project's impacts are less than significant.

Screening Criteria

The Irvine CEQA Manual presents quantitative and performance-based screening criteria adopted by the City of Irvine. Screening criteria may be an appropriate part of thresholds for environmental areas that require a quantitative or more technical approach to evaluating environmental effects, such as air quality, greenhouse gas, noise, and transportation. The screening criteria provide assistance in responding to the City's initial study checklist questions and can help determine if further study is needed to identify a potentially significant impact. CEQA screening criteria are not intended as bright-line thresholds[3] that determine significant impacts; rather, they provide additional guidance to identify when impacts would not occur or are *de minimus* so that a detailed analysis is not necessary.[4] The significance criteria are based on a variety of factors, including existing City, regional, state, and federal regulations and adopted policies.

1.2.3 Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the applicable plans, policies, and programs (PPPs) in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, regional, state, and federal regulations, including the City's Standard Conditions of Approval. Because they are existing plans, policies, and programs, compliance with PPPs are assumed when assessing the potential impacts of the project. This assumption may lead to the conclusion that a project will have less than significant impacts.

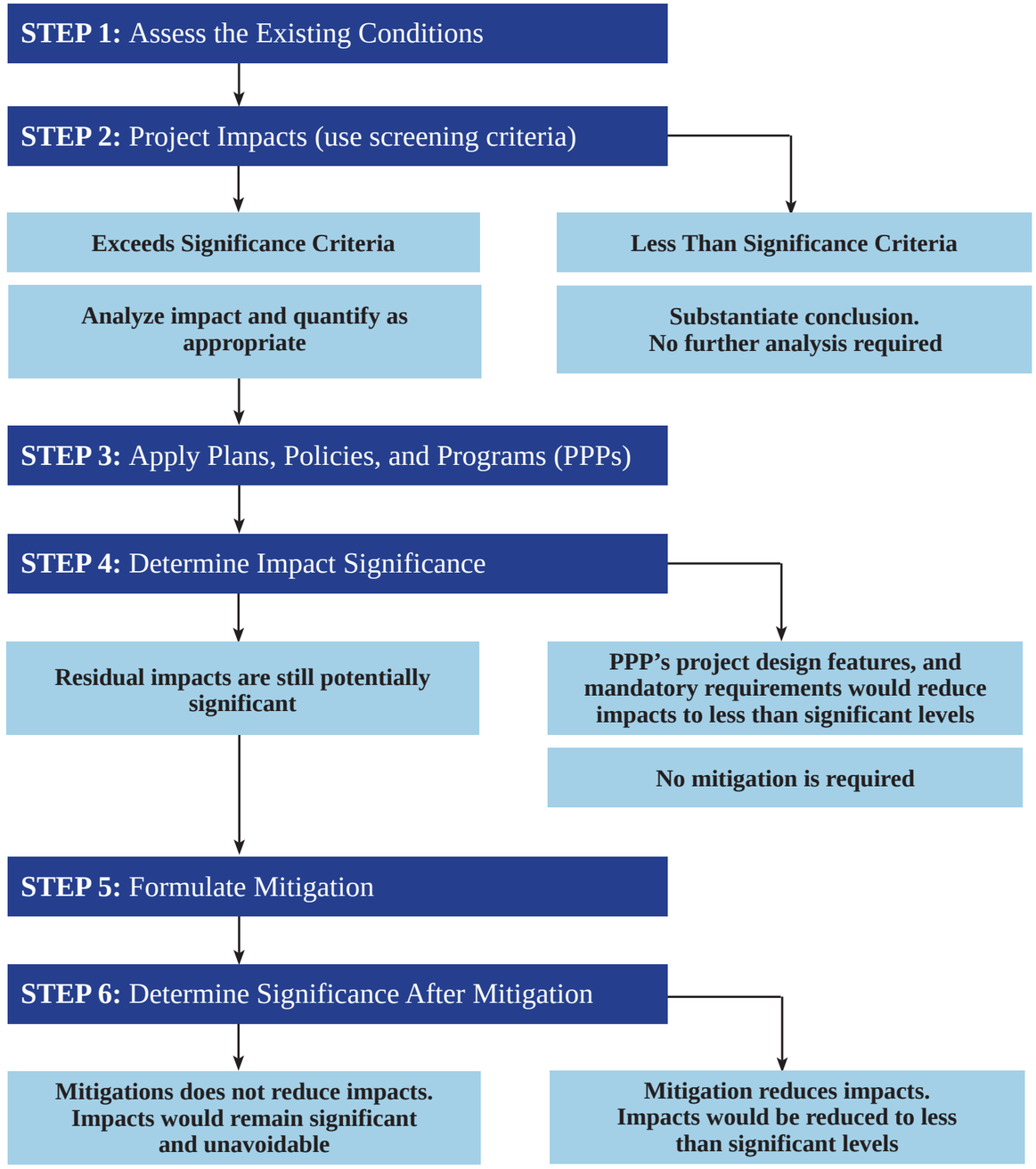
[3] A bright-line threshold is a numeric threshold that assesses total impacts generated by a project compared to existing conditions. Projects that exceed a bright-line threshold are typically considered to have a significant impact. Projects that fall under a bright-line threshold (with or without mitigation) are less than significant.

[4] An example of the City's screening-level analysis is for vehicle miles traveled (VMT). Does the project meet any of the following criterion: (1) Project nets an increase of 250 or less daily trips (based on latest edition of ITE); (2) Project is in a High Quality Transit Area (i.e., within half a mile of an existing rail transit station or within half a mile of two or more existing bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hours); (3) Project is a 100 percent restricted affordable housing project. (Note: if less than 100 percent, the number of affordable units is not subject to VMT impact analysis.); (4) Project is determined to be local serving, such as: 100,000 square feet or less retail without drive-through operations, a daycare or a K-12 local-serving public school. (For a full discussion of screening requirements, refer to Volume III, Appendix I, VMT Impact Analysis Guidelines.)

Figure 1.1

Flow Chart - General Approach for Environmental Analysis

General Approach for Environmental Analysis



1. Introduction

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1.2.4 Step 4: Determine Impact Significance

If it is determined that a project impact exceeds the significance criteria (with the Plans, Policies, and Programs (PPPs) assumed), the impact is considered potentially significant. In some cases, an impact may not be significant if it is consistent with the General Plan, the City's long-range vision, or other existing plans or guidelines for the project site. In the initial study, "no impacts" and "less than significant impacts" must be substantiated, but these categories are not carried over for further analysis in the EIR. All "potentially significant impacts" must be discussed in the EIR. If there are no potentially significant impacts, a negative declaration, may be prepared. When it is apparent that mitigation measures can reduce impacts to less than significant levels, a mitigated negative declaration may be prepared. If the implementation of all feasible mitigation measures would not reduce impacts to less than significant, an EIR is required. All significance conclusions must be substantiated in the analysis.

1.2.5 Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are formulated after it has been substantiated that an impact is potentially significant. Mitigation measures must be feasible to be enforced and implemented by the project applicant, lead agency, or other responsible agency. There must be a nexus between the impact and the mitigation measure, and the mitigation measure must be roughly proportional to the impact created by the project. In other words, mitigation measures are intended to reduce or eliminate environmental impacts of a proposed project.

1.2.6 Step 6: Determine Significance After Mitigation

After the implementation of all mitigation, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. The City may choose to approve a project despite these significant and unavoidable impacts, but to do so, it must prepare and approve a statement of overriding considerations as part of the Final EIR certification.

1.3 SOURCES OF INFORMATION

Appendix B includes a list of available common sources or references providing scientific or factual data that can be used to determine potential environmental impacts. Several environmental topical chapters of the Irvine CEQA Guidelines also provide standard reference data and figures that further demonstrate the potential for environmental impacts.

1.4 PLANS, POLICIES, AND PROGRAMS

A list of applicable PPPs that have been adopted by the City, regional agencies, state agencies, or federal government are provided in Appendix C of the Irvine CEQA Guidelines. This appendix provides a nonexclusive list of PPPs that can be cited for their potential to reduce project impacts.

1.5 IRVINE STANDARD CONDITIONS OF APPROVAL

The City of Irvine's Standard Conditions of Approval are in Appendix E. Although many Standard Conditions of Approval are also included as PPPs in Appendix C, Appendix E provides an up-to-date list of Standard Conditions applied to development projects in the City.

1. Introduction

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2. Environmental Review Process

2.1 DESCRIPTION OF THE ENVIRONMENTAL REVIEW PROCESS

The following is a summary of the environmental review process. Detailed information on the environmental review process for the City of Irvine can be found in Volume I, *Environmental Procedures*, and in CEQA and the State CEQA Guidelines.[1]

In recognition of Section 65941 of Chapter 4.5 of the Permit Streamlining Act, the City of Irvine (lead agency) will simultaneously review the project entitlements under applicable state and local rules and conduct the necessary environmental analysis. The state and local entitlement processing rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with existing statutes, codes, and regulations. The procedure usually results in a public hearing followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

The CEQA procedure involves a number of steps that produce an environmental document informing the permit decisions of the lead agency as well as the responsible and/or trustee agencies.

The first step in the CEQA process is to determine whether the proposed project is subject to CEQA. There are a number of statutory and categorical exemptions. If the project is exempt from CEQA, the lead agency may file a Notice of Exemption. If the project is subject to CEQA, the lead agency must prepare an Initial Study to determine whether the project may have a significant adverse impact on the environment. The initial study must be completed within 30 days after an application is deemed complete by the City.

If the initial study shows that the project will not have a significant effect on the environment, the lead agency may prepare and circulate a Negative Declaration. Where potentially significant effects are shown, but the project is modified to include mitigation measures such that the effects are rendered insignificant, the lead agency may prepare and circulate a mitigated negative declaration. In either case, the public review period cannot be less than 20 days. If the negative declaration is submitted to the State Clearinghouse for review, the public review period must be 30 days. If a project is subject to both CEQA and the National Environmental Policy Act (NEPA), it must be ready for adoption by the lead agency within 105 days after a completed application is accepted.

If the initial study shows that the project may have one or more significant effects, the lead agency must circulate a notice of preparation in anticipation of preparing an environmental impact report (EIR) and must consult with responsible and trustee agencies as to the content of the environmental analysis (see Appendix H for a list of common agencies). “Responsible agency” means a public agency that proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, a responsible agency includes all public agencies other than the

[1] The material in this section is descriptive of the CEQA process. In the event of any perceived or actual conflict between the information in this section and the prescriptive requirements of CEQA and the State CEQA Guidelines, CEQA and the State CEQA Guidelines control.

lead agency that have discretionary approval power over the project.[2] "Trustee agency" means a state agency having jurisdiction by law over natural resources that are affected by a project and which are held in trust for the people of the State of California.[3]

Responsible agencies have 30 days to respond to the NOP. If a responsible or trustee agency does not respond, the lead agency may assume that the responsible agency has no response to make.

Following the close of the NOP response period, the lead agency must prepare and circulate a Draft EIR (DEIR). All concerned agencies and the public may review the DEIR. All comments on the DEIR must be made within the 45-day review period. Comments from responsible or trustee agencies are limited to project activities that are within the agency's area of expertise, must be carried out or approved by the agency, or will be subject to the exercise of powers by the agency.

At the close of the review and comment period, the lead agency must respond in writing to the comments received.

The lead agency prepares and certifies a Final EIR. If the lead agency approves the project, it must find that each significant impact will be mitigated below the level of significance where feasible, that mitigation is within the responsibility and jurisdiction of another agency, or that overriding social or economic concerns merit the approval of the project in the face of unavoidable adverse effects.

2.2 TYPES OF ENVIRONMENTAL DOCUMENTS

2.2.1 Statutory Exemptions

Statutory exemptions are projects specifically excluded from CEQA consideration by the State Legislature. These exemptions are delineated in Public Resources Code §§ 21080 et seq. A statutory exemption applies to any project that falls under its definition, regardless of the project's potential impacts on the environment.

2.2.2 Categorical Exemptions

Categorical exemptions operate differently from statutory exemptions. Categorical exemptions are made up of classes of projects that generally are considered not to have potential impacts on the environment. Categorical exemptions are identified by the State Resources Agency and are defined in the State CEQA Guidelines (14 California Code of Regulations §§ 15300–15332). Unlike statutory exemptions (which are exempt from CEQA even if they have environmental impacts), categorical exemptions may not be used for projects that could cause a significant effect on environment due to unusual circumstances. There are currently 33 classes of categorical exemptions.

[2] An example of a responsible agency is the Santa Ana Regional Water Quality Control Board for a project requiring a 404 Permit.

[3] An example of a trustee agency is the California Department of Fish and Game with regard to the fish and wildlife of the state; designated rare or endangered native plants; and game refuges, ecological reserves, and other areas administered by the department.

2.2.3 Initial Study

Initial studies provide a preliminary analysis of a proposed action to determine whether a negative declaration or an EIR should be prepared. An initial study also enables an applicant or lead agency to modify a project to mitigate significant adverse impacts in lieu of preparing an EIR, thereby potentially enabling the project to qualify for a negative declaration. The initial study provides a factual basis for the negative declaration or serves to focus an EIR on the significant effects of a project. The initial study must contain:

- Project description.
- Environmental setting.
- An identification of potential environmental impacts by use of checklist, matrix, or other method, and brief explanations to support findings.
- A discussion of ways to mitigate the significant effects identified, if any.
- An examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls.
- Names of parties responsible for preparation.

The lead agency may use the environmental checklist form in Appendix G of the State CEQA Guidelines. The City's Environmental Information Form and Environmental Checklist are included in Appendix G of the Irvine CEQA Guidelines.

2.2.4 Negative Declaration

A negative declaration is a written statement describing the reasons that a proposed project would not have a significant effect on the environment and does not require the preparation of an EIR. A negative declaration should contain, but not be limited to, the following:

- A brief description of the project, including a commonly used name for the project.
- The location of the project, shown on a map, and the name of the project proponent.
- A proposed finding that the project would not have a significant effect on the environment.
- An attached copy of the initial study documenting reasons to support the finding.
- Mitigation measures, if any, included in the project to avoid potentially significant effects.

If the initial study indicates that potentially significant impacts could be mitigated to a level of insignificance with the incorporation of mitigation measures, a mitigated negative declaration (MND) would be prepared. An MND is a negative declaration that incorporates revisions (mitigation measures) in the proposed project that will avoid or mitigate impacts to a point where clearly no significant impacts to the environment would occur.

The lead agency must file a notice of determination (NOD) within five working days after deciding to approve or carry out the project. For projects that have more than one phase, a lead agency must file a

NOD for each phase of the project that requires discretionary approval. The filing of an NOD starts a 30-day statute of limitation period for filing a lawsuit challenge on the adequacy of the negative declaration. Additional requirements for filing an NOD depend on whether the lead agency is a state or local agency and if the project requires any discretionary approvals from a state agency.

2.2.5 Environmental Impact Report

The requirement to prepare an EIR is the core exercise of CEQA. An EIR is a disclosure document that serves to inform governmental agencies and the public of a project's environmental impacts. Further, an EIR proposes mitigation measures and alternatives that may reduce or avoid the environmental impacts. Just as the EIR is considered the central component of CEQA, mitigation and alternatives are considered the most meaningful components of an EIR, and they are required.

The EIR process begins with the circulation of a Notice of Preparation (NOP) that informs the public, responsible agencies, trustee agencies, and the Office of Planning and Research that an EIR will be prepared for a given project. The NOP must include sufficient project description details and likely environmental effects such that agencies and public citizens can provide meaningful comments on the proposed project for analysis in the EIR. The NOP comment period is no shorter than 30 days.

After preparation of the draft EIR, a Notice of Completion (NOC) must be submitted to the Office of Planning and Research that includes project location, location of review copies, and public comment review period information. The lead agency must provide public notice of the draft EIR at the same time it issues the NOC. This public notice must be posted in the office of the County Clerk for at least 30 days, and it must include the location of any public meetings intended to solicit comments on the draft EIR. If the draft EIR is circulated through the State Clearinghouse, the public comment period must be a minimum of 45 days, unless a shortened review period is approved by responsible and trustee agencies in advance.

The lead agency must prepare a final EIR before approving the project. The contents of a final EIR are specified in Section 15132 of the State CEQA guidelines, and include formal responses to comments made on the draft EIR. The lead agency then certifies the final EIR and issues its findings. Should significant and unavoidable impacts remain after mitigation, a Statement of Overriding Considerations must be prepared and, if the project is approved, adopted. Finally, the lead agency may decide whether or how to approve or carry out the project at which time an NOD must be filed within 5 working days of approval. Filing of the NOD begins a 30-day statute of limitations for filing a lawsuit challenging the adequacy of the EIR. If the lead agency does not file an NOD, the statute of limitations increases to 180 days. Additional requirements for filing depend on whether the lead agency is a state or local agency.

Contents of the EIR

As stated above, an EIR contains standard sections that are specified in Sections 15122 through 15130 of the State CEQA guidelines. The contents of an EIR include:

- A table of contents or index.
- A brief summary of the proposed actions and their consequences.

- A detailed description of the project.
- Description of the environmental conditions in the vicinity of the project.
- Consideration and discussion of environmental impacts (organized into impact categories outlined in Chapter 3 of this document).
- Consideration and discussion of significant environmental impacts (including significant unavoidable and adverse impacts).
- Mitigation measures proposed to minimize significant effects.
- Alternatives to the proposed project.
- A statement indicating the reasons that various possible significant effects of a project were determined not to be significant (often addressed in the initial study, attached as an appendix).
- A list of organizations and persons consulted.
- Discussion of cumulative impacts.

With regard to project alternatives, one alternative that a lead agency must consider is the no project alternative, that is, the conditions that would occur based on current plans and consistent with available infrastructure and community services if the project were not approved. Among all the alternatives, the EIR identifies the environmentally superior alternative; if the environmentally superior alternative is the no project alternative, the EIR identifies the environmentally superior alternative among the other alternatives.

The Final EIR consists of the materials listed in Section 15132 of the State CEQA Guidelines.

Types of EIRs

There are various types of EIRs used to document environmental impacts under CEQA, as defined by Sections 15160 to 15170 of the State CEQA Guidelines. For reference, the definitions of EIRs that are most commonly used by the City of Irvine are provided below.

Project EIR. The most common type of EIR examines the environmental impacts of a specific development project. This type of EIR focuses primarily on the changes in the environment that would result from that development project. The EIR examines all phases of the project—planning, construction, and operation.

Subsequent EIR. A subsequent EIR has the same content, noticing, and public review requirements as the aforementioned Project EIR. It is prepared by the public agency that grants the next discretionary approval for the project, and no other agencies can approve the project until the subsequent EIR is certified. The baseline environmental conditions in a Subsequent EIR should be analyzed pursuant to the State CEQA Guidelines.

CEQA requires a subsequent EIR when:

- Substantial changes in the *project* cause new significant impacts or an increase in previously identified impacts (emphasis added).

- Substantial changes in the *circumstances* cause new significant impacts or an increase in previously identified impacts (emphasis added).

- New information of substantial importance becomes available that indicates that: 1) the project would have a new significant impact; 2) the project would create an impact of greater severity; 3) mitigation measures or alternatives that the EIR found infeasible are now feasible, but are declined by the applicant; 4) mitigation measures or alternatives are identified that are considerably different than those in the EIR and would substantially reduce a significant impact, but are declined by the applicant.

Supplement to an EIR. If a project meets the conditions for a subsequent EIR, but only minor changes to the previous EIR are required, the lead agency can prepare a supplement to an EIR. A supplement need contain only the information necessary to make the original EIR adequate. A supplement may be circulated by itself, without the previous EIR, but the decision-making body must consider both the previous EIR and the supplemental EIR. The baseline environmental conditions in a supplement to an EIR should be analyzed pursuant to the State CEQA Guidelines.

Addendum to an EIR. An addendum to an EIR is generally prepared when changes or additions to a certified EIR do not meet the criteria for a subsequent or supplemental EIR or negative declaration. It does not need public review, but must be considered along with the Final EIR or adopted negative declaration. A brief explanation of the decision not to prepare a subsequent or supplemental EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.

Program EIR. A Program EIR examines the total scope of environmental effects that would occur as a result of buildout of the entire project site. By examining the full scope of the proposed project and subsequent applications and approvals at this early stage of planning, the program EIR provides a full disclosure of the environmental impacts that may occur throughout the project site, together with an analysis of the site-specific and cumulative environmental impacts that will occur throughout the buildout time frame of the proposed project.

Although the legally required contents of a program EIR are the same as those of a project EIR, program EIRs are typically more conceptual and may contain a more general discussion of impacts, alternatives, and mitigation measures. As provided in Section 15168 of the State CEQA Guidelines, a program EIR may be prepared on a series of actions that can be characterized as one large project. Use of a program EIR provides the opportunity to consider broad policy alternatives and program-wide mitigation measures and gives the City greater flexibility to address project-specific and cumulative environmental impacts on a comprehensive basis.

Projects that are proposed within the program EIR's area may be able to tier off the program EIR. Later activities within the program must be evaluated to determine whether additional CEQA documentation needs to be prepared. However, if the program EIR addresses the program's effects as specifically and

comprehensively as possible, many later activities can be found to be within the program EIR scope, and additional environmental documents may not be required (Guidelines § 15168(c)). When a program EIR is relied on for a later activity, the lead agency must incorporate its feasible mitigation measures and alternatives into the later activities (Guidelines § 15168(c)(3)). If a later activity would have effects that are not within the scope of the program EIR, the lead agency must prepare a new initial study leading to a negative declaration, mitigated negative declaration, or an EIR. In that case, the program EIR still serves a valuable purpose as the first-tier environmental analysis. The State CEQA Guidelines encourage the use of program EIRs, citing five advantages:

1) To provide a more exhaustive consideration of impacts and alternatives than would be practical in an individual EIR.

2) To focus on cumulative impacts that might be slighted in a case-by-case analysis.

3) To avoid continual reconsideration of recurring policy issues.

4) To consider broad policy alternatives and programmatic mitigation measures at an early stage when the agency has greater flexibility to deal with them.

5) To reduce paperwork by encouraging the reuse of data (through tiering).

2.3 PROCESSING PROJECTS PURSUANT TO A CERTIFIED PROGRAM EIR

The City is divided into Planning Areas, which are shown in Figure 2-1, *City of Irvine Planning Areas*. In order to reduce the amount of paperwork and unnecessary environmental analysis, the City of Irvine has prepared program EIRs for some Planning Areas. In these circumstances, the project may tier off the program EIR (see Section 2.2.5.2, *Types of EIRs*). The original program EIR identifies potential environmental impacts compared to the existing physical conditions at the time of preparation. When preparing an addendum, supplement to an EIR, or subsequent EIR, the physical impacts identified in the original program EIR constitute the baseline environmental conditions that can be used to identify new or substantially more severe environmental impacts than shown in the previous program EIR. If no program EIRs have been prepared or if the area is completely built out, this is noted. Copies of the program EIRs are available at the City.

2. Environmental Review Process

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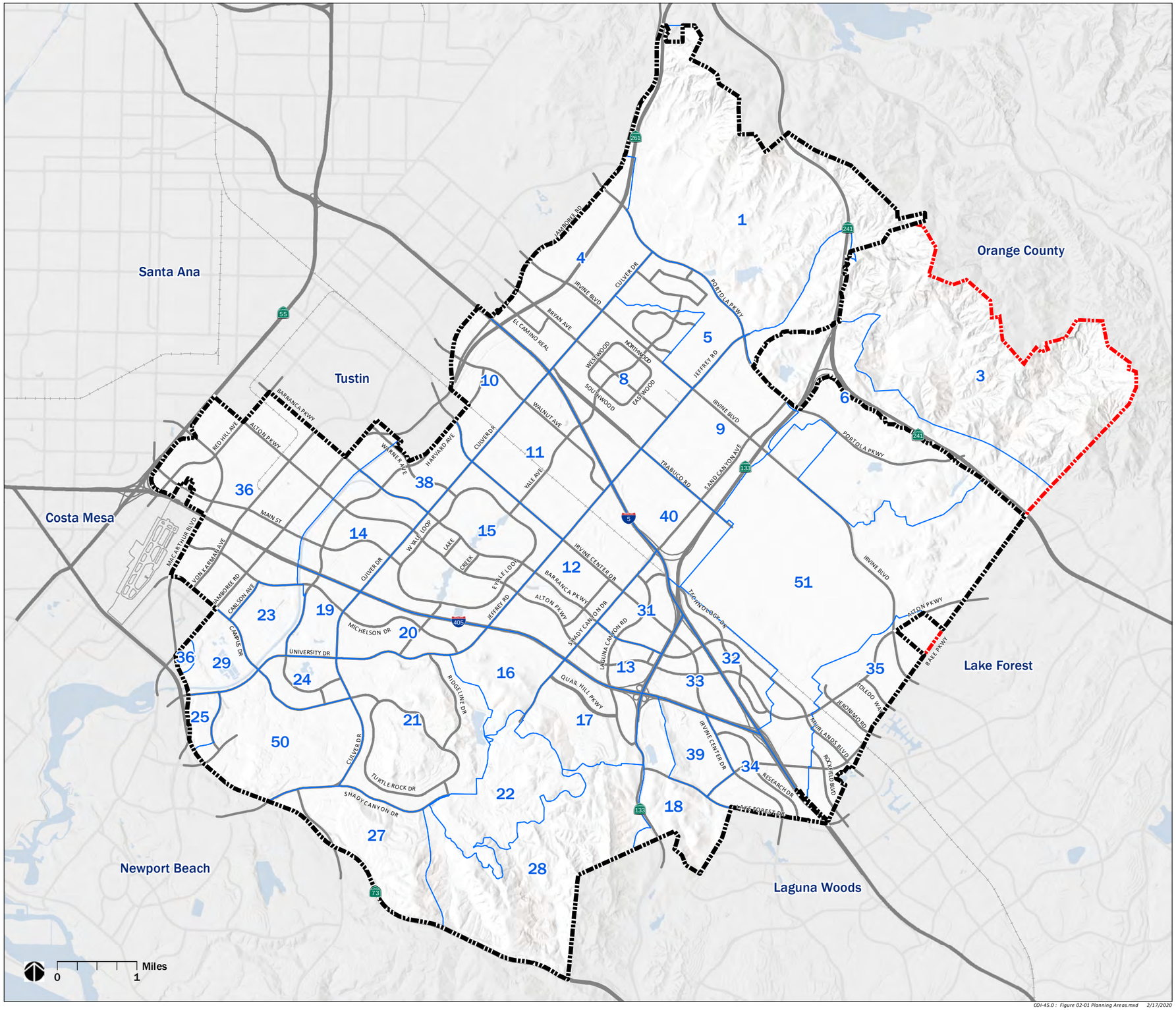
Figure 2-1

PLANNING AREAS



LEGEND

- City Boundary
- Sphere of Influence
- Planning Areas
  - PA 1 - Orchard Hills
  - PA 3 - Limestone Canyon
  - PA 4 - Lower Peters Canyon
  - PA 5 - Northwood Point
  - PA 6 - Portola Springs
  - PA 8 - Northwood
  - PA 9 - Woodbury
  - PA 10 - Walnut
  - PA 11 - El Camino Real
  - PA 12 - Oakcreek
  - PA 13 - Irvine Spectrum 4
  - PA 14 - West Park
  - PA 15 - Woodbridge
  - PA 16 - Quail Hill - Open Space
  - PA 17 - Quail Hill
  - PA 18 - Laguna Altura
  - PA 19 - Rancho San Joaquin
  - PA 20 - University Park
  - PA 21 - Turtle Rock
  - PA 22 - Shady Canyon
  - PA 23 - San Joaquin Marsh
  - PA 24 - University Town Center
  - PA 25 - University Research Center
  - PA 27 - Turtle Ridge
  - PA 28 - Bommer Canyon
  - PA 29 - UCI - North Campus
  - PA 31 - Irvine Spectrum 6
  - PA 32 - Irvine Spectrum 3
  - PA 33 - Irvine Spectrum Center
  - PA 34 - Irvine Spectrum 5
  - PA 35 - Irvine Spectrum 2
  - PA 36 - Irvine Business Complex
  - PA 38 - Westpark II
  - PA 39 - Los Olivos
  - PA 40 - Cypress Village
  - PA 51 - Orange County Great Park

2. Environmental Review Process

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3. Environmental Impact Categories

3.1 AESTHETICS

Aesthetics, views and visual resources, light and glare, and shade and shadow issues are all elements of the visual environment.

3.1.1 Background

Relevant Planning Programs

There are several previous land use planning actions adopted by the City and other regional programs that are relevant to the protection of visual resources. The following is a discussion of these planning actions and programs.

Initiative Resolution 88-1 and General Plan Amendment 16

In June 1988, Initiative Resolution 88-1, "An Initiative Resolution of the City of Irvine Directing the Amendment of the Conservation and Open Space Element and the Land Use Element of the Irvine General Plan" (Open Space Initiative), was adopted by the City of Irvine voters. This resulted in the establishment of the Conservation/Open Space Program that provides for the eventual public ownership of approximately 9,000 acres of open space to be accomplished through the transfer of development opportunities to areas that can better accommodate development in exchange for the transfer of open space to the public. By consolidating large contiguous areas of open space designated for preservation, and permitting development in areas deemed to be of lesser open space value, the Conservation/Open Space Program preserves important open space resources.

Following approval of Resolution 88-1, the City and the Irvine Company executed a memorandum of understanding to implement the open space program and establish the Phased Dedication and Compensating Development Opportunities Program (Dedication/Development Program). The areas of the City directly affected by the Dedication/Development Program were divided into lettered "Implementation Districts" containing both designated open space dedication areas and corresponding development areas (see Figure 3.1-1, *Dedication/Development Program Implementation Districts*).

Natural Community Conservation Plan/Habitat Conservation Plan

The City of Irvine is located within the boundaries of Orange County's Central-Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). Preparation of NCCPs was authorized by the Natural Community Conservation Act, California Fish and Game Code §§ 2800 to 2840 (NCCP Act), which was signed into law in 1991. The Reserve areas, as well as areas identified for development, are identified in the NCCP/HCP. The NCCP/HCP is a state program designed to protect critical habitat through a comprehensive management and conservation program while providing for reasonable economic development. The NCCP Act is designed to protect important habitat before it becomes necessary to declare certain species that use that habitat as endangered. It provides an alternative to protecting species on a "single species basis" as with the Federal Endangered Species Act (FESA) (16 USC §§ 1531 et seq.) and the California Endangered Species Act (Fish and Game Code §§ 2050 et seq.).

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Under the NCCP Act, the California Department of Fish and Wildlife (CDFW) is responsible for implementing process planning and conservation guidelines for NCCP programs.

In 1982, FESA was amended to give private landowners the ability to develop HCPs pursuant to Section 10(a) of FESA. Upon development of an HCP, the US Fish and Wildlife Service (USFWS) can issue incidental-take permits for listed species where the HCP specifies, at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

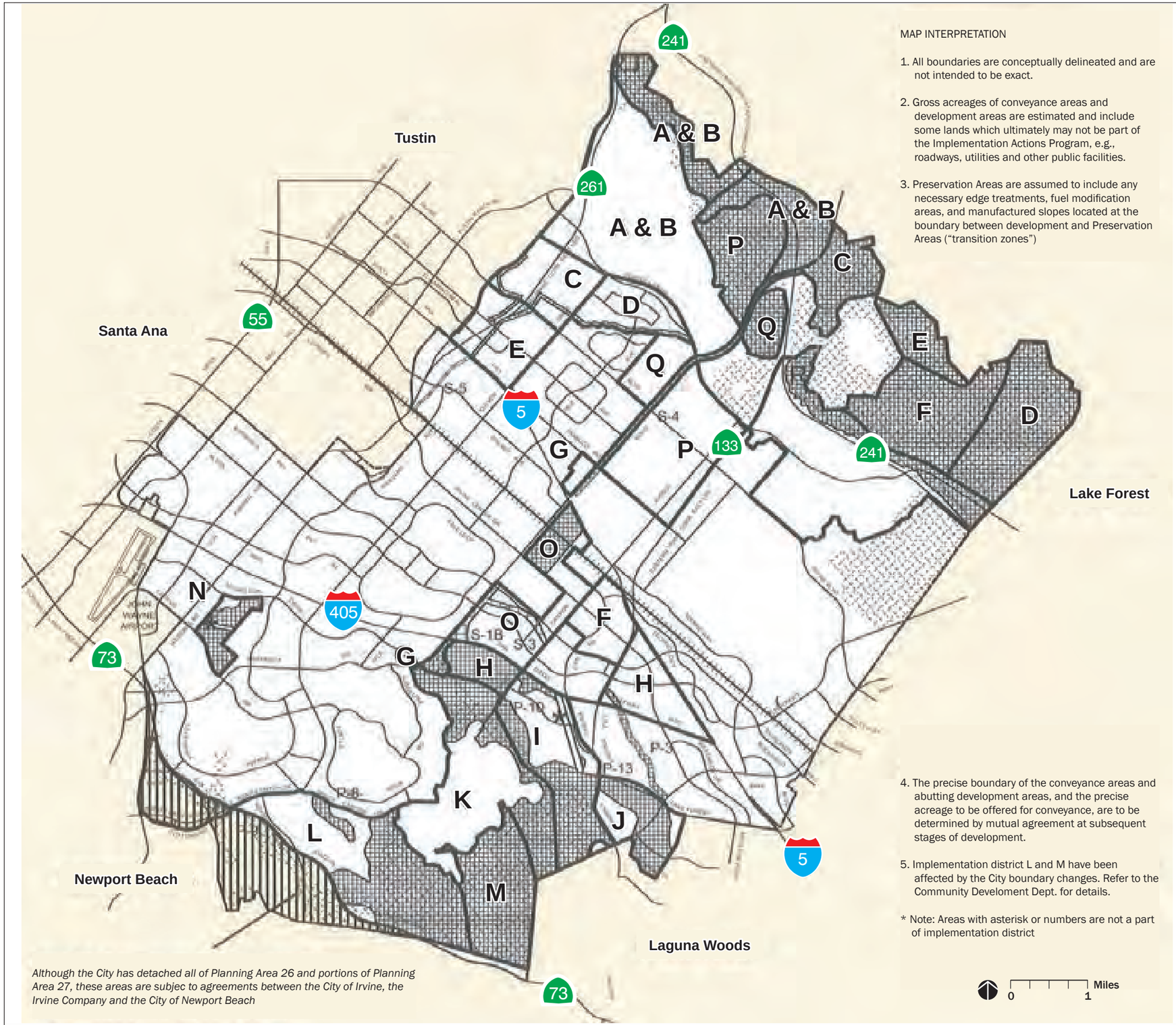
In 1996, an environmental impact report/environmental impact statement (EIR/EIS) for the Orange County Central-Coastal Subregion NCCP/HCP was prepared with the County of Orange and the USFWS as lead agencies, and the CDFW as a responsible agency. Based on the Central-Coastal NCCP/HCP, the USFWS and the CDFW authorized "take" of "identified species" and approved modification of "covered habitats" under the state and federal ESAs and the federal Migratory Bird Treaty Act. Following certification of the EIR/EIS, the participating agencies and landowners, including the City and the Irvine Company, signed an implementation agreement. The implementation agreement set forth the implementation requirements for the Central-Coastal NCCP/HCP, including requirements related to dedication, creation, and management of a 37,000-acre nature reserve system as well as procedures and minimization measures related to take of identified species and modification of habitat in areas designated for development.

Aesthetics and Visual Resources

Aesthetics generally refer to the identification of visual resources (natural and man-made) and the quality of what can be seen, as well as to an overall judgment (visual perception) of the visual environment. Aesthetic features occur in a diverse array of environments, ranging in character from urban centers to rural regions and wildlands. Features may include, but are not limited to:

- Open space
- Native or ornamental vegetation/landscaping
- Topographic or geologic features (including ridgelines of the Santiago and San Joaquin Hills)
- Natural water features
- Structures of architectural or historic significance or visual prominence
- Public plazas, art, or gardens
- Eucalyptus or other trees or plants protected by the City
- Landscaped medians or park areas

The prominent landforms in the City include the Santiago Hills, northern flatlands, central flatlands, and San Joaquin Hills. The Santiago and San Joaquin Hills have ridgelines that can be seen from various vantage points within the City (including major roadways), while views of the flatlands and the Pacific Ocean can be seen from the higher elevations. San Diego Creek and numerous other washes, as listed in Table 3.1-1, run through the City. The locations of these visual resources are shown in Figure 3.1-2, *Visual Resources*. Predominantly, these resources are protected through the City's Conservation/Open Space Dedication Program, described above.



Although the City has detached all of Planning Area 26 and portions of Planning Area 27, these areas are subjec to agreements between the City of Irvine, the Irvine Company and the City of Newport Beach

Figure 3.1-1

Dedication/Development Program Implementation Districts

LEGEND

- City Sphere of Influence
- Preservation Area
- Spine
- Development Area
- NCCP habitat identified for future public ownership by the Facilitation Agreement (Irvine Ballot Measure "C" Initiative Resolution No. 88-1) between the City and Landowner

Source: Irvine, City of. 2015 (revised). City of Irvine General Plan Conservation Element, Figure L-3, Implementation Districts.

3. Environmental Impact Categories

AESTHETICS

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Figure 3.1-2

VISUAL RESOURCES

LEGEND

Visual Resources #

1. San Joaquin Marsh
2. William R. Mason Regional Park / Sand Canyon Wash
3. Woodbridge Lakes
4. Borrego Canyon Wash
5. Peters Canyon Wash
6. Hick Canyon Wash
7. Bee Canyon Wash
8. Aqua Chinon Wash
9. San Joaquin Hills Ridgeline
10. Santiago Hills Ridgeline

Significant Ridgelines

City Boundary

Sphere of Influence

Data provided by the City of Irvine on 6/30/2016

COI-45.0 : Figure 03.01-2 Visual Resources.mxd 4/6/2020

3. Environmental Impact Categories

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Table 3.1-1
Notable Visual Resources in the City of Irvine

Type of Resource	*Examples in Irvine*
Hills	The Santiago Hills and San Joaquin Hills, including canyons, plateaus, narrow ridges, and rock outcroppings
Natural watercourses[1]	San Diego Creek, Agua Chinon Wash, Bee Canyon Wash, Borrego Canyon Wash, Hicks Canyon Wash, Peters Canyon Wash, Sand Canyon Wash, and San Joaquin Freshwater Marsh
Artificial lakes	Woodbridge Lakes and the William R. Mason Regional Park lakes

[1] Notable visual resources are the natural portions of those watercourses only.

Light and Glare

Light

Light sources are man-made evening and nighttime light. When introduced by a project, they may increase ambient nighttime illumination and glare levels in the immediate project area. Cumulatively, light can affect the night sky condition. Light is addressed in CEQA because it has the potential to interfere with or disrupt certain basic human functions and needs, including vision, sleep patterns, internal cycles, privacy, and the general enjoyment of the natural nighttime condition, such as evening views.

Glare

Glare is a lighting condition that causes an observer to experience visual discomfort as a result of high levels of constant or intermittent brightness. Glare can be caused by either:

- The reflection of the sun off highly reflective surfaces during the day (i.e., daytime glare).
- The reflection of artificial light sources (e.g., automobile headlights, special-events lighting) off reflective surfaces at night (i.e., nighttime glare).

General light and glare requirements that apply to development projects are found in the Standard Conditions of Approval (Standard Condition 3.6) and are provided throughout the various chapters of the City's Municipal Code (Division 9) and Zoning Ordinance (Chapter 3-16).

Shade and Shadow

The issue of shade and shadow pertains to the blockage of direct sunlight by proposed buildings or other structures (such as walls) that affects adjacent properties and the natural environment. Sample shade-shadow analyses are shown in Figure 3.1-3, *Sample Winter Shade-Shadow Analysis,* and Figure 3.1-4, *Sample Summer Shade-Shadow Analysis*. Land uses sensitive to the effects of shading include:

- Routinely useable outdoor spaces associated with residential, recreational, or institutional land uses (e.g., schools, convalescent homes, care facilities).

- Commercial uses such as pedestrian-oriented outdoor spaces or restaurants with outdoor eating areas.

- Plant nurseries.

The issue of shade and shadow pertains to the blockage of direct sunlight by onsite buildings, which affects adjacent properties. Shading is an important environmental issue because the users or occupants of certain land uses, such as residential, recreational, outdoor restaurants, and pedestrian areas, have expectations for direct sunlight and warmth from the sun. Factors that influence the extent and range of shading include season; time of day; weather; building height, bulk, and scale; spacing between buildings; and tree cover. The longest shadows are cast when the sun is lowest on the horizon, that is, during the winter months and in the early morning and late afternoon. The shortest shadows are cast during the summer months and in the middle of the day. The City does not have any specific provisions for regulating shade or shadow impacts. Therefore, impacts will be determined on a case-by-case basis considering factors such as adjacent land use, sensitivity to shade/shadow, time of day of the impact, and the duration of the impact.

Scenic Highways

State-Designated Scenic Highways

State scenic highways are either officially designated as state scenic highways by the California Department of Transportation (Caltrans) or are eligible for such designation. Eligible scenic highways are identified in the Streets and Highway Code, Section 260, of the California Scenic Highway Program. According to the California Scenic Highway Mapping System of Caltrans, there are no officially designated or eligible state scenic highways within the City boundaries or in proximity to the City (Caltrans 2017).

Locally Designated Scenic Highways

Figure 3.1-5, *Scenic Highways*, identifies a number of roadways that traverse the City as either Scenic Highways of Rural or Natural Character or Scenic Highways of Urban Character.[1] Table 3.1-2 lists these roadways.

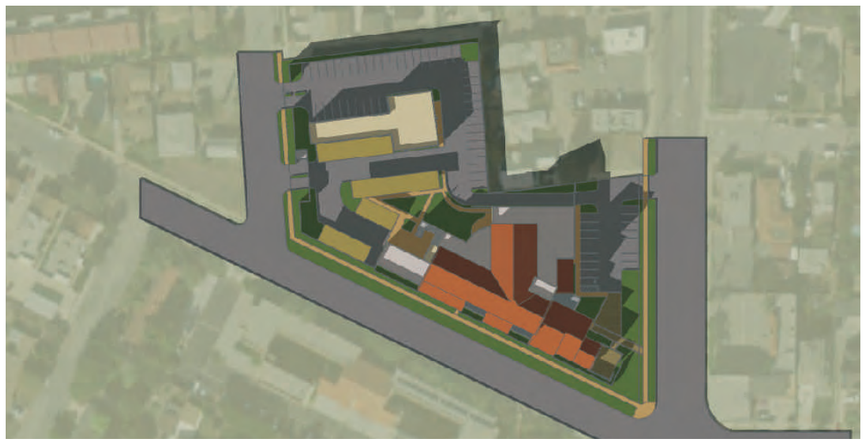
Table 3.1-2
Scenic Highways in Irvine

Highways of Rural or Natural Character	*Highways of Urban Character*
Sand Canyon Avenue (south of I-5)	Sand Canyon Avenue (north of I-5)
Jeffrey Road/University Drive (south of I-5 and north of Portola Parkway)	Jeffrey Road (between north of I-5 and south of Portola Parkway)
Laguna Canyon Road/Laguna Freeway (south of I-405)	Culver Drive
Bonita Canyon Road/Shady Canyon Road	I-5/I-405 (south of split)

[1] It should be noted that Figure 3.1-5, *Scenic Highways*, is based on the City's General Plan, and the existing figure will be superseded by the Scenic Highways figure as part of the General Plan Update.

9:00 AM December 21

12:00 PM December 21



3:00 PM December 21

Figure 3.1-3

Sample Winter Shade-Shadow Analysis

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9:00 AM June 21

12:00 PM June 21

4:00 PM June 21

Figure 3.1-4

Sample Summer Shade-Shadow Analysis

3. Environmental Impact Categories

AESTHETICS

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Figure 3.1-5

SCENIC HIGHWAYS

LEGEND

- Urban Character
- Rural or Natural Character
- City Boundary
- Sphere of Influence

Data provided by the City of Irvine on 6/30/2016

COI-45.0 : Figure 03.01-5 Scenic Highways.mxd 4/6/2020

3. Environmental Impact Categories

AESTHETICS

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These designations are intended to minimize the impact of land development on the visual and scenic resources along these designated roadways. Through the City's General Plan and Zoning Ordinance, the City specifies development guidelines and standards that help minimize the obstruction of views and maintain existing scenic highways.[2]

3.1.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for aesthetic resources. A project would normally have a significant effect on the environment, except as provided in Public Resources Code § 21099, if the project would:

a) Have a substantial adverse effect on a scenic vista.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

3.1.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1 of this manual. The aesthetics environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to aesthetics are provided in this section for each step of this flow chart.

Step 1: Determine the Existing Conditions

- Is the site developed or vacant?
- If it is vacant, has it been developed in the past or is it natural?
- If it is developed, what are the characteristics of the onsite development?
- What types of vegetation and natural features (e.g., water or rock outcroppings) are on the site?
- Are there visual resources as documented in Table 3.1-1 or on Figure 3.1-2 on or near the site?

[2] Views from private property are not protected by CEQA or the City of Irvine. Therefore, all views addressed in these guidelines are public views, not private views.

3. Environmental Impact Categories

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- Who has a view of the project site? Are these public or private views? What views do people on the project site have?
- Are the site and surrounding areas well lit or are they dark?
- What are the existing lighting facilities and building materials?
- Are there surrounding land uses that would be sensitive to light (i.e., residential land uses, nursing homes, natural habitat, etc.)? How far are light-sensitive land uses from the project boundaries?

Step 2: Project Impacts

The following issues and questions should be taken into account when determining whether the project would have potential impacts.

- Is the site planned for development by the City's General Plan?
- What would the project look like during construction and after completion?
- How much grading is involved? Are landforms altered?
- What would be the proposed building setbacks, scale, and massing? Are they consistent with City code?
- What are the proposed construction materials, architectural themes, and landscaping features? Will reflective surfaces be used?
- Is the project visible from a designated local or state scenic highway?
- What lighting features would be included with the proposed project?
- In which direction would project-generated lighting be directed? What intensity would lighting have?
- Would proposed lighting routinely spill over onto adjacent sensitive land uses? (Note: Lighting studies, which may be used to determine the amount and intensity of lighting sources and their impact on surrounding light-sensitive land uses, are described under "Methodology.")
- For projects involving a change in policies or long-range programs (e.g., General Plan Update), where specific structure designs (e.g., elevations and/or building footprints) have not been identified, use the maximum development envelope (e.g., maximum buildings heights, minimum setbacks, and maximum lot coverage) permitted according to the applicable zoning.

Pursuant to Section 21099(d) of the Public Resources Code, if a project is within a transit priority area, aesthetic impacts of a residential, mixed-use residential, or employment center project shall not be considered significant impacts on the environment. A transit priority area means an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program or applicable regional transportation plan.

Step 3: Apply Plans, Policies, and Programs

- Is the project subject to the City's design guidelines that are specific to an area (e.g., IBC Vision Plan, UCI's Long Range Development Plan) or are there design guidelines in the program EIR for the area where the project is located?

- Reference the following design manuals, municipal code sections, and/or standard conditions of approval for the details on existing regulations:
    - Conservation/Open Space Dedication Program
    - Section VII of the City of Irvine Parks and Park Facilities Standards (lighting standards for various athletic fields)
    - Standard Condition 3.6, Site Lighting Requirements, of the Standard Conditions of Approval
    - Irvine Uniform Security Code (in the Irvine Municipal Code) for lighting requirements
    - Hillside Overlay District (City of Irvine Zoning Ordinance)

Step 4: Determine Impact Significance

For aesthetic impacts, the degree of significance is based on how much the project would alter the existing visual setting (e.g., landforms, landscaping, building massing) by either damaging a publicly viewed aesthetic resource or introducing substantial light or glare sources. Other factors to consider include the scale of development originally considered for the site and surrounding areas, and whether the project impacts open space that is required by the City's Open Space Dedication Program. Questions to consider include:

- Does the project substantially change the existing appearance of the site or the surrounding properties through features such as increased massing inconsistent with the surrounding development?

- Does the project limit visual access to open space areas, particularly from scenic highways?

- If the project changes the existing appearance of the site, is the change consistent with the General Plan or zoning designations for that site and does it conform to the adopted design guidelines?

Impacts to aesthetic resources are hard to quantify and typically rely on photo renderings. For light and glare or shade and shadow impacts, the degree of significance can be based on quantitative evidence. Questions to consider include:

- Does the project block sunlight on an adjacent property?

- Does it contribute excessive light and glare on an adjacent property? Software programs can provide simulations that help make these determinations.

- After using lighting and shade impact analysis methods (described below), does the project negatively impact adjacent sensitive land uses?

Aesthetic resource impact analysis may require specific methods or techniques to assess impacts. The following section describes these methods.

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Aesthetic Resources and Visual Simulations

Line of Sight Analysis

If scenic resources are identified on or near a proposed project, or if they can be seen from the project site, and the proposed project may have potential to obstruct these resources, a line of sight analysis may be used to determine the impact significance. Multiple viewpoints and focal points should be identified on a map of the area. Lines of sight should be used to connect the viewpoints and focal points. For each view line, a view section (cross-section) may also be prepared. View sections depict locations and elevations of the viewpoint, view resources, and project elements. These sections should identify the extent to which the view is clear or obstructed by existing and proposed structures. If the proposed project would obstruct a view, additional field-of-view analysis may be needed to determine the extent to which project elements would obstruct the view.

Photo Renderings

When a project requires additional analysis to determine how it would alter the existing terrain, the aesthetic analysis should include a discussion based on perspective renderings and visual simulations. A visual simulation or rendering requires information about building height, footprint, and design. These must be prepared through computer software such as AutoCAD, Lumion, Photoshop or SketchUp. The resulting image is a photo of the existing site with the rendered image overlaid on the photo. Multiple viewpoints may be required to accurately depict the proposed project. This technique can be applied to scenic resource analysis or scenic highway resources.

Lighting

When it is determined that a proposed project may produce light that overflows into adjacent light-sensitive properties, a lighting/photometric analysis would be required. This type of analysis requires computer software (such as Autodesk 3ds Max) to calculate how far light would travel and how intense it would be on adjacent land uses. The analysis uses inputs such as the proposed lighting height, type, and intensity (usually measured in foot-candles).

Shade and Shadow

If a project will include sunlight-blocking structures in excess of three stories or 45 feet in height above the ground that would impact shade-sensitive uses, a shade-and-shadow analysis must be prepared to illustrate the extent of the shadows cast at different times of the day. As appropriate, diagram the footprint of the proposed structure(s) and nearby shade-sensitive uses. Calculate and diagram the length of shadows that would be cast by proposed structure(s) during extreme conditions, that is, the winter solstice (December 22) and summer solstice (June 21). The spring and fall equinoxes represent intermediate conditions.

Keep in mind that factors that influence the extent of shading include: season; time of day; weather (i.e., sunny vs. cloudy day); building height, bulk/mass, and scale; topography; spacing between buildings; sensitivity of adjacent land uses; and tree cover. The longest shadows are cast during the winter months, when the sun is lowest on the horizon, and the shortest shadows are cast during the summer months. Shadows are longer in the early morning and late afternoon. Consequences of shadows upon land uses may be positive, including cooling effects during warm weather, or negative, such as the loss of natural light and its warming influences during cool weather.

Step 5: Formulate Mitigation

Mitigation measures to reduce aesthetic impacts would include additional landscaping or berming to shield development from view; alternative grading measures, including landform grading; or shifting development away from open, natural areas or on hillsides. Mitigation measures to reduce light impacts generally include directing light away from sensitive land uses to reduce spillage effects, limiting the length of sporting events that use intense nighttime lighting, and placing shades and hoods on lighting fixtures to help direct lighting. The City of Irvine utilizes lighting and aesthetic resource restrictions that would preclude the need for additional mitigation measures for most impacts (see Step 3). For instance, the City of Irvine's Uniform Security Code (Title 5, Division 9 of the Irvine Municipal Code) includes standards and requirements for lighting and glare in the City, including heights of lighting fixtures; design, installation, and maintenance of lighting fixtures; standards for new development of multifamily and nonresidential development; lighting for parking areas; and sign illumination. If impacts remain significant after the implementation of required development standards and restrictions, mitigation measures that directly correspond to the potentially significant impact must be identified. There must be a nexus between the project impact and the mitigation measure proposed to reduce the impact.

Step 6: Determine Significance After Mitigation

As described in the flow chart in Chapter 1, Figure 1-1, a determination of project impacts should be made after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite these significant and unavoidable impacts.

3. Environmental Impact Categories

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3.2 AGRICULTURE AND FORESTRY RESOURCES

The City of Irvine comprises 66 square miles in the coastal and foothill region of central Orange County. The prominent landforms in the City include the Santiago Hills, northern flatlands, central flatlands, and San Joaquin Hills (see Figure 3.2-1, *Landform Zones*). The San Joaquin Hills consist of rolling terrain with moderately steep slopes, canyons, and narrow ridges. Agriculture and forestry resources generally occur in the Santiago Hills, San Joaquin Hills, and northern flatlands areas of Irvine.

3.2.1 Background

Relevant Planning Programs

State

Farmland Mapping and Monitoring Program

The California Department of Conservation (CDC), through the Farmland Mapping and Monitoring Program (FMMP) of the Division of Land Resource Protection, classifies agricultural lands as shown in Table 3.2-1.

The farmland classification areas within the City of Irvine are shown in CDC's farmland designation map of Orange County, "Orange County Important Farmland 2016." The portion of the map that encompasses the City of Irvine and general vicinity is reproduced as Figure 3.2-2, *Agricultural Resources*. As shown in Figure 3.2-2, the City consists of a variety of the land classifications outlined in Table 3.2-1, with the majority of farmland classifications in the northern portion of the City.

Williamson Act

In 1965, the State of California enacted the California Land Conservation Act, more commonly known as the Williamson Act (California Government Code §§ 51230 et seq.). The Williamson Act provides tax incentives for landowners who enter into contracts with the local government for long-term use restrictions on agricultural and open space land for qualifying properties. There are no Williamson Act contracts on any lands in the City.

Local

Northern Sphere Area and Agricultural Legacy Program

Buildout of the City of Irvine and its sphere of influence (SOI) in accordance with the City's General Plan would result in the conversion of undeveloped land, including agricultural land, to urban use. In the past few years the City has considered conversion of agricultural lands in undeveloped areas of the City and its SOI—specifically, Planning Areas (PA) 1, 2, 5, 6, 8, 9, 18, 30, 39, 40, and 51. This effort has resulted in the revision of Objective L-10 of the General Plan Conservation and Open Space Element. As revised, the General Plan objective states "Encourage the maintenance of agriculture in undeveloped areas of the City until the time of development, and in areas not available for development." Objective L-10 was intended by the City to apply throughout the City and its SOI.

3. Environmental Impact Categories

AGRICULTURE AND FORESTRY RESOURCES

Table 3.2-1
Agricultural Land Classifications

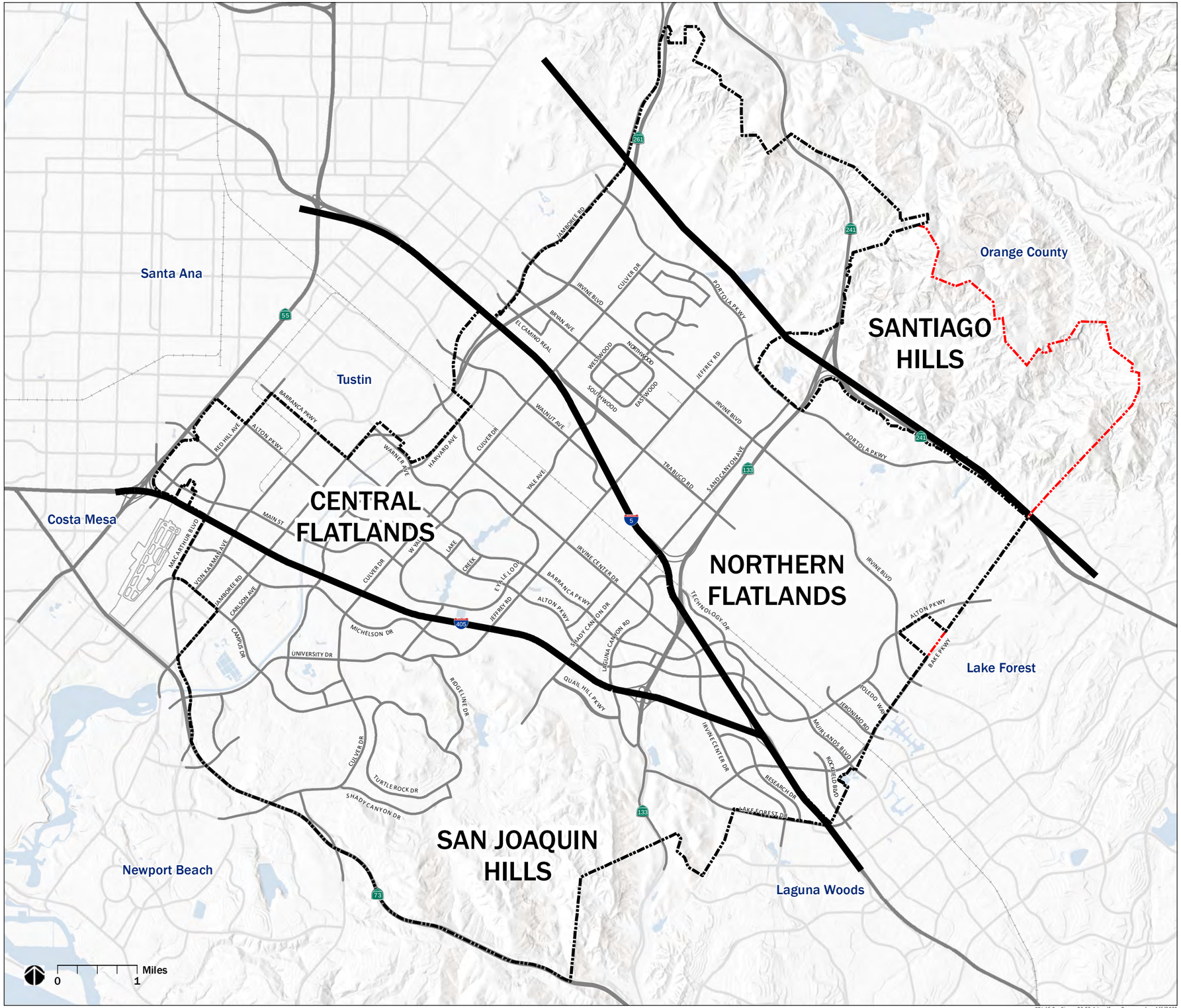
Land Classification	*Definition*
Prime Farmland	Farmland with the best combination of physical and chemical features and able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
Farmland of Statewide Importance	Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
Unique Farmland	Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
Farmland of Local Importance	Land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.
Grazing Land	Defined by Government Code 65570(b)(3) as "land on which the existing vegetation, weather grown naturally or through management, is suitable for grading or browsing of livestock." The minimum mapping unit for Grazing Land is 40 acres and is identified by a grazing land advisory committee in each project county.
Urban and Built-up Land	Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures per 10 acres. Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, and water control structures.
Other Land	Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.
Land Committed to Nonagricultural Use	This designation is an overlay to the standard farmland categories described above. This designation represents lands that have been permanently committed by local elected officials for non-agricultural development. These lands must be designated in an adopted, local general plan for future non-agriculture purposes and meet the requirements of Urban and Built-up Land or rural development in the Other Land category (in addition to other requirements). Such lands represent planning areas that cannot be reversible by a simple majority vote by a city council or board of supervisors.[1]

Sources: CDC. 2019. Important Farmland Categories. https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx; and CDC, n.d. "Important Farmland Mapping Categories and Soil Taxonomy Terms," https://www.conservation.ca.gov/dlrp/fmmp/Documents/soil_criteria.pdf.

[1] In the City of Irvine, this overlay encompasses lands owned by the Irvine Company.

Figure 3.2-1

LANDFORM ZONES



CDI-45.0 : Figure 03.02-1 Landform Zones.mxd 4/6/2020

LEGEND

- Landform Zone Boundary
- City Boundary
- Sphere of Influence

Data provided by the City of Irvine on 2/17/2016

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Figure 3.2-2

AGRICULTURAL RESOURCES

LEGEND

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- City Boundary
- Sphere of Influence

Note:
In 2006, the City of Irvine informed the Department of Conservation for the FMMP about entitlements granted between 2003 and 2013 and believes that the appropriate designation for OCGP, with the exception of the 13-acres in Development District 6, is "Land Committed to Nonagricultural Use."

Data from California Department of Conservation, Farmland Mapping and Monitoring Program, 2016.

CO1-45.0 : Figure 03.02-2 Agricultural Resources.mxd 4/6/2020

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The purpose of the Agricultural Legacy Program outlined in Policy L-10(a) is to facilitate limited-scale agricultural operations and programs on public lands in Irvine, including small-scale specialty farming, model farming, heritage farming, and community service/educational farming. One example of a metro-farming operation is an "edible landscape program," a heritage farming operation involving Southern California Edison (SCE) easements, where produce is grown within the public easements and sold by the farmer.

The Agriculture Legacy Program has led to additional efforts and studies in the City:

- In 2003, the Irvine Agricultural Legacy Program Preliminary Sites Assessment study evaluated eight candidate sites and various SCE easements/properties for inclusion in the program.
- In 2005, as a part of the PA 1/PA 2/PA 9 Project, 508 acres of existing avocado groves within PA 1 were redesignated Agriculture under the City's General Plan Land Use Element and zoned 1.1 Exclusive Agriculture. See the City of Irvine's Zoning Map.

Orange County Great Park

Although portions of the Orange County Great Park (OCGP or PA 51) are designated Prime Farmland, Farmland of Statewide Importance and Unique Farmland, with the exception of 13-acres in Development District 6, the majority of OCGP has been committed to non-agricultural uses through the existing entitlements granted between 2003 and 2013. As part of the development plan for the OCGP, the City has designated approximately 73 acres of agricultural land to be preserved within the OCGP, in addition to the land that will be included in the City's Agricultural Legacy Program.

Forestry Resources Regulations and Policies

Forestry resources have been added to the City's Initial Study checklist (Section II, Agriculture and Forestry Resources, parts c, d, and e). Forestry resources in the City of Irvine are protected by the City's Conservation/Open Space Program that provides for the public ownership of approximately 11,741 acres of open space in the City and its sphere of influence, to be accomplished through the transfer of development opportunities to areas that can better accommodate development in exchange for the transfer of open space to the public. By consolidating large, contiguous areas of open space designated for preservation, and permitting development to occur in areas deemed to be of lesser open space value, the Conservation/ Open Space Program preserves important open space resources.

Forest Land and Timberland Classification

The California Public Resources Code categorizes forestry resources as shown in Table 3.2-2.

Table 3.2-2
Forestry Resource Land Classifications

Forestry Resource Classification	*Definition*
Forest Land	In accordance with California Public Resources Code (PRC) Section 12220, forest land is classified as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.
Timberland	In accordance with California PRC Section 4526, timberland is classified as land—other than land owned by the federal government and land designated by the State Board of Forestry and Fire Protection as experimental forest land—that is available for and capable of growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees.
Timberland Production Zone	In accordance with California PRC Section 51104(g), timberland production zone is an area that has been zoned pursuant to PRC Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses.

Source: California Public Resources Code Sections 4526, 12220, 51104, 51112, and 51113.

Forest Land Resources

In accordance with the forest land classification of California PRC Section 12220, portions of the City of Irvine consist of forest land resources, including the Santiago Hills and some areas of the northern flatlands, central flatlands, and San Joaquin Hills. Many of these forest resources occur in the areas designated as Eucalyptus Windrows, Sand Canyon Oak Trees, and NCCP Habitat Reserve. Refer to Figure 3.4-3, *Biological Resources and NCCP Areas,* in Section 3.4, *Biological Resources*.

City programs for protecting forestry resources include the Eucalyptus Windrow Maintenance and Protection Plan for Lower Peters Canyon (September 1996) and the Urban Forestry Ordinance (Title 5, Division 7, Chapter 4, Urban Forestry, of the City's Municipal Code). Applicants are required to carry out a tree survey and obtain a permit for their removal in accordance with the Section 5-7-410 (Tree Removal) of the Urban Forestry Ordinance (including 1:1 replacement).

Timberland Resources

Timberland is land that is available for and capable of growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. In accordance with the classification of California PRC Section 51104, there are no timberland production zones within the City.

3.2.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for agriculture and forestry resources. A project would normally have a significant effect on the environment if the project would:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code § 4526), or timberland zoned Timberland Production (as defined by Government Code § 51104(g)).

d) Result in the loss of forest land or conversion of forest land to non-forest use.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

3.2.3 Determining Significance

The method for determining agriculture and forestry resource impacts is based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to agriculture and forestry resources are provided in this section for each step of the flow chart.

General Approach

The general steps for determining significance should follow the same steps as described in the flow chart in Chapter 1. Additional questions are provided for each step.

Step 1: Determine the Existing Conditions

The following questions are provided to refine the list of questions in Chapter 1 in order to obtain a more accurate assessment of the existing conditions for agriculture and forestry research analysis.

- Is the site used for agricultural purposes, timberland production, or forestry resources?
    - Does it fall into any of the categories listed in Table 3.2-1 or 3.2-2?

- Is it zoned or designated for agricultural or forest land uses that are not described in Tables 3.2-1 or 3.2-2?

- Are there adjacent agricultural or forest land uses (whether they are designated or not)?

AGRICULTURE AND FORESTRY RESOURCES

Step 2: Project Impacts

For each of the City's Initial Study checklist questions (the significance thresholds), the potential for significant impacts must be determined. There are no screening criteria for agriculture impacts, but the following questions can be used to help determine whether impacts would be potentially significant.

For thresholds a, b, and e:

- Is the site planned for development by the City's General Plan?
- Are any of the proposed land uses agricultural?
- Would the project remove agricultural land uses?
- Does the proposed project affect agricultural land designated by the FMMP?

For thresholds c, d, and e:

- Does the proposed project designate any area for forestry resources or timberland production?
- Would the project remove existing forestry resources as defined in the Public Resources Code?

Step 3: Apply Policies, Plans, and Programs

In addition to consulting the City's General Plan Conservation and Open Space Element, other resources may apply to the project site. The following regulations should be applied if they are enforced on the project site.

- Agricultural and forest land development restrictions in the Northern Sphere Area:
    - Consult the appropriate program EIR prepared for the Northern Sphere Area, PA 40, or Orange County Great Park for discussions of agriculture resources
    - Consult the program EIR prepared for the Northern Sphere Area, PA 8, PA 9, PA 12, and PA 40 for discussions of forestry resources
- The City's Conservation/Open Space Dedication Program
- Farmland Mapping and Monitoring Program
- Williamson Act Contract lands
- Orange County Central and Coastal Subregion Natural Community Conservation Plan
- City's Urban Forestry Ordinance

Step 4: Determine Impact Significance

If it has been determined that there is potential for significant impacts and there are no PPPs that would reduce the project impact, the resulting significance determination must be stated and substantiated. For

agriculture and forestry resources, the following should be taken into account when making the significance determination:

- The project site may be used for agriculture or forest lands but not designated by the FMMP, Williamson Act contracts, the General Plan, or the Public Resources Code.
    - In this case, what is the proposed land use for this site?
    - Is this site planned for development by the City's General Plan?
    - Would agriculture or forest resource production be consistent with this vision?

If the project site has already been designated for nonagriculture or nonforest land uses, the conversion of the project site would not be potentially significant if environmental analysis has been prepared previously.

Consultation with state agency departments and information is helpful in determining impacts to agriculture and forestry resources. In determining whether impacts to agriculture resources would be a significant environmental effect, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (LESA) (1997) prepared by the CDC. This model determines the production and economic value of the agriculture land as an optional model to use in assessing impacts on agriculture and farmland, if deemed necessary (see "Methodology" for more information on how to complete the LESA model).

Lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project, and to the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board (CARB).

California Agricultural Land Evaluation and Site Assessment Model (LESA)

When required, methodologies for determining agriculture and forestry resource impacts may include the LESA model prepared by the CDC and the Forest Protocols adopted by CARB. More information on completing LESA is found on the CDC website at:

- https://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx

More information on completing Forest Protocols is found on the CARB website at:

- https://ww3.arb.ca.gov/cc/capandtrade/protocols/usforest/usforestprojects_2015.htm

Step 5: Formulate Mitigation

Agriculture Resources

As described previously, the City of Irvine is developing the Agricultural Legacy Program and has developed open space programs. Once established, land within the Agricultural Legacy Program will be permanently committed to agricultural production or in public ownership, so development pressure and land prices are not a factor. Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures are meant to relate directly to the project impact and must be feasibly enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the

proposed mitigation measure. Feasible mitigation needs to be considered on a project-by-project basis to mitigate for the effects of development in the City on agriculture resources.

Forestry Resources

The conversion of undeveloped open space to urban uses is specifically anticipated in the Irvine General Plan as a result of General Plan Amendment 16, which designated specific large areas to be preserved as permanent open space in accordance with the Conservation and Open Space Phased Dedications Districts program. This confines the growth anticipated in the General Plan to areas that the City has determined are suitable for development. The cumulative conversion of undeveloped land to urban uses resulting from implementation of approved and planned projects in the City would occur within the provisions of the Conservation and Open Space Phased Dedications Districts program. This program permanently protects forestry resources in the City of Irvine.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would reduce but not avoid impacts, the remaining impacts are significant and unavoidable. The City must adopt a statement of overriding considerations if it chooses to approve a project despite these significant and unavoidable impacts.

3.3 AIR QUALITY

3.3.1 Background

The City of Irvine is within the South Coast Air Basin (SoCAB), which is managed by the South Coast Air Quality Management District (AQMD). South Coast AQMD is a "commenting agency" for development projects undergoing CEQA review. Projects within the City are subject to the rules and regulations adopted by South Coast AQMD; the California Air Resources Board (CARB), including the California Ambient Air Quality Standards (CAAQS); and the United States Environmental Protection Agency (EPA), including the National Ambient Air Quality Standards (NAAQS).

3.3.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the set of significance thresholds for air quality impacts. A project would normally have a significant effect on the environment if the project would:

a. Conflict with or obstruct implementation of the applicable air quality plan.

b. 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.

c. Expose sensitive receptors to substantial pollutant concentrations.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

3.3.3 Determining Significance

General Approach

South Coast AQMD, as a commenting agency, has adopted detailed guidance for addressing air quality impacts under CEQA. Therefore, the environmental impact analysis for air quality is based on the screening criteria and significance criteria developed by South Coast AQMD. The general approach and significance criteria identified by South Coast AQMD are described in this section.

Air pollutants of concern that may be generated by a project during its construction or operational phases can include:

- **Criteria Air Pollutants,** air pollutants for which ambient air quality standards have been established by the state or the EPA.

- **Toxic Air Contaminants (TACs),** air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a present or potential hazard to human health.

South Coast AQMD first adopted guidelines for evaluating air quality impacts in 1993 in the CEQA Air Quality Handbook. Since adoption of the 1993 Handbook, South Coast AQMD has amended several chapters of the Handbook online: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-

handbook. Air quality analyses conducted in the City of Irvine adhere to South Coast AQMD's guidelines. Applicable guidelines for air quality assessments for development projects are shown in Table 3.3-1.

Table 3.3-1
Guidelines for Assessing Air Quality Impacts of Development Projects

Type	*Guidance*
General Guidance	• South Coast AQMD. 1993. CEQA Air Quality Handbook. • South Coast AQMD. Air Quality Analysis Guidance Handbook. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook
Regional Thresholds	• South Coast AQMD. South Coast AQMD Air Quality Significance Thresholds. (Further discussed below.) • South Coast AQMD. Air Quality Management Plan. (Further discussed below.)
Localized Significance	• South Coast AQMD. 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. • South Coast AQMD. 2008, July (revised). Final Localized Significance Threshold Methodology. • South Coast AQMD. 2008, July (revised). Final Localized Significance Threshold Methodology, Appendix C: Mass Rate LST Look-up Tables. • South Coast AQMD 2005. Sample Construction Scenarios for Projects Less Than Five Acres in Size.
Health Risk Assessment	• South Coast AQMD. 2003, August. Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis. • Office of Environmental Health Hazards Assessment (OEHHA). 2015, February. Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. Air Toxics Hotspots Program.

Step 1: Determine the Existing Conditions

The existing conditions section should include a discussion on the existing ambient air quality environment and applicable regulations for criteria air pollutants and toxic air contaminants. Air quality analyses conducted within the City of Irvine are required to adhere to South Coast AQMD's guidelines (1993 Handbook and updates available at http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook).

Modeling Tools

A list of modeling tools is available on South Coast AQMD's website: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-modeling. There are several generally accepted models for use in California to identify criteria air pollutant emissions from development projects.[1] The most commonly used model

[1] Current models used include CalEEMod. SCAQMD also allows use of the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emission Model and models accepted by CARB and the EPA. On-road and off-road emission factors within CARB's EMFAC and OFFROAD models are available at CARB's

for development projects is South Coast AQMD'S CalEEMod. While this model is still accepted as of 2019, it is recommended that future development projects use the latest model available when conducting their CEQA evaluation.

Step 2: Project Impacts

Project impacts are based on the Regional Significance Thresholds adopted by South Coast AQMD.

The South Coast AQMD has established thresholds of significance for air quality for construction activities and project operation. The current regional significance thresholds are shown in Table 3.3-2. For projects that exceed the thresholds in Table 3.3-2 despite implementation of mitigation measures, the environmental document should provide an analysis linking air quality impacts to health effects. Since the South Coast AQMD's thresholds are based on a level that would not have a significant effect on ambient air quality, there should be no need to discuss the health effects of criteria pollutant emissions that are less than the significance thresholds.

Table 3.3-2
South Coast AQMD Regional Significance Thresholds

Air Pollutant	*Construction Phase*	*Operational Phase*
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Fine particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day
Lead (Pb)[1]	3 lbs/day	3 lbs/day

Source: South Coast AQMD 2019.
[1] Lead is typically generated by industrial projects.

Construction Phase

The CalEEMod model estimates emissions from construction activities based on typical construction equipment mix and construction duration. These estimates were based on surveys of construction sites conducted by South Coast AQMD. However, if more accurate estimates of construction equipment mix and construction duration are available from the applicant, modeling should be tailored to include project-specific information. In addition, South Coast AQMD has adopted Rule 403, Fugitive Dust Control. Air quality modeling should be tailored to include reductions from compliance with South Coast AQMD's Rule 403 during construction activities.

Operational Phase

Emissions generated by a project during its operational phase may include emissions from stationary/area (e.g., off-gas emissions from painting, landscape equipment, and fireplaces) and transportation sources.

website: www.arb.ca.gov. Common dispersion modeling tools accepted for use for development (non-permit) projects include HARP, SCREEN3, ISCST3, AERMOD, and Caline4.

The CalEEMod program also calculates indirect emissions from purchased energy use[2] and direct emissions from natural gas consumption (e.g., stoves and heaters). South Coast AQMD has adopted Rule 445, Wood-Burning Devices, which prohibits the use of woodstoves and fireplaces in the City of Irvine. Consequently, modeling should assume use of gas fireplaces if included in a project. CalEEMod provides an estimate of daily vehicle trip generation, percentage of pass-by trips, and percentage of diverted trips based on the Institute for Transportation Engineers' Trip Generation Manual. While an estimate of daily trips and vehicle miles traveled is provided, the model should be tailored to include project-specific information if a traffic study was prepared for the project.

Localized Significance Thresholds (Onsite)

South Coast AQMD has developed localized significance thresholds (LSTs) for emissions of nitrogen dioxide (NO_2), carbon dioxide (CO), and particulate matter (PM_{10}, and $PM_{2.5}$) generated at a project site. (Offsite mobile-source emissions are not included the LST analysis.) LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the CAAQS or NAAQS. Screening criteria have been developed for project sites smaller than five acres (see http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook). Projects larger than five acres or that disturb more than five acres during construction can determine the significance of these emissions by performing dispersion modeling, using the thresholds in Table 3.3-3 for emissions that exceed the screening-level (five acre) LSTs.

Table 3.3-3
South Coast AQMD Localized Significance Thresholds

Air Pollutant Standard (Relevant AAQS)	*Concentration*
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
24-Hour PM_{10} Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3

Source: South Coast AQMD 2019
ppm = parts per million
µg/m^3 = micrograms per cubic meter
[1] Threshold is based on South Coast AQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an "allowable change" in concentration. Therefore, background concentration is irrelevant.

[2] The CalEEMod program calculates greenhouse gas emissions from purchased electricity based on the carbon intensity of electricity production for the energy provider, which is currently Southern California Edison for the City of Irvine.

Localized Impacts: CO Hotspots (Offsite)

The 1993 CEQA Air Quality Handbook includes methodology to conduct localized CO modeling for traffic generated by a project. At the time of the 1993 Handbook, the SoCAB was designated nonattainment under the CAAQS and NAAQS for CO. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined. In 2007, the South Coast AQMD was designated in attainment for CO under both the CAAQS and NAAQS.[3]

Odor Impacts

South Coast AQMD defines odor impacts as projects that generate an odor nuisance under South Coast AQMD Rule 402. Facilities that have the potential to generate odor impacts include:

- Wastewater Treatment Plants
- Wastewater Pumping Facilities
- Landfills
- Transfer Stations
- Composting and Greenwaste Recycling Facilities
- Asphalt Batch Plants
- Chemical Manufacturing
- Fiberglass Manufacturing
- Painting/Coating Operations
- Food Processing Facilities

Project applicants siting new odor-generating facilities that generate substantial odors should consider the potential for odor impacts under Rule 402.

Health Risk

Whenever project activities would include the use of chemical compounds that have been identified in South Coast AQMD Rule 1401 relating to TACs, placed on CARB's TAC list pursuant to Assembly Bill (AB) 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the South Coast AQMD. Table 3.3-4 lists the South Coast AQMD's TAC incremental risk thresholds for operation of a project. It should be noted that the purpose of CEQA is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (Case No. S213478). CEQA does not require an analysis of the environmental effects of attracting development and people to an area. However, the environmental document must analyze the impacts of environmental hazards on future users when a

[3] Peak carbon monoxide concentrations in the SoCAB were a result of unusual meteorological and topographical conditions, and not a result of congestion at a particular intersection (SCAQMD 1992, SCAQMD 2003). A CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods and did not predict a violation of CO standards. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (BAAQMD 2017). Since intersections cannot accommodate this volume of traffic in a one-hour period, CO hotspot modeling is typically not warranted for development projects within the City.

proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not emit substantial quantities of TACs and typically do not exacerbate existing hazards, so these thresholds are typically applied for new industrial projects.

Table 3.3-4
South Coast AQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Individual Cancer Risk	≥ 10 in 1 million
Cancer Burden	≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million)
Hazard Index (project increment)	≥ 1.0

Source: South Coast AQMD 2019

Consistency with the AQMP

Review of project compliance with the South Coast AQMD AQMP gives the lead agency information for determining how individual projects fit into the local planning effort; informs decision makers about project-related environmental efforts under consideration at an early enough stage to ensure that air quality concerns are fully addressed; and ensures project compliance with clean air goals contained in the AQMP. Pursuant to the 1993 Handbook, a project would be inconsistent with the AQMP if it would:

- Contribute to an increase in frequency or severity of air quality violations; or
- Delay attainment of the California or National AAQS.

For land use development projects, a consistency analysis with the AQMP starts with an evaluation of the land use designations onsite. The regional emissions inventory for the SoCAB is compiled by the South Coast AQMD and the Southern California Association of Governments (SCAG). Regional population, housing, and employment projections developed by SCAG are based, in part, on the City's General Plan land use designations. The emissions inventory in the AQMP is based on these projections. These demographic trends are incorporated into the Regional Transportation Plan/Sustainable Communities Strategy, compiled by SCAG, to determine priority transportation projects and determine vehicle miles traveled within the SCAG region. Project-related changes in the existing population, housing, or employment growth projections may affect SCAG's demographic projections and consequently the assumptions in South Coast AQMD's AQMP.

The consistency evaluation should include the following tiered screening approach:

- **Tier 1**: Is the project consistent with the General Plan land use designation? If yes, the project is consistent with the AQMP; if no, proceed to Tier 2.
- **Tier 2:** Is the project a regionally significant project under SCAG's intergovernmental review criteria that could exceed regional employment, population, and housing projections within the region? If no, the project is consistent with the AQMP. This is because only projects that result in macro-level shifts in employment, population, or housing have the potential to alter the demographic projections of SCAG. If yes, proceed to Tier 3.

- **Tier 3:** Does the project generate emissions that exceed the South Coast AQMD regional or localized significance thresholds? If yes, the project would be inconsistent with the AQMP; if no, the project is consistent with the AQMP.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, regional, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and preclude the need for additional analysis. This must be substantiated in the environmental analysis.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and that existing PPPs cannot reduce the impact to less than significant, these impacts are potentially significant. In some cases, an impact may not be significant if it is consistent with the general plan, the City's vision for the area, or other existing plans or guidelines for the project site. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

For air quality, mitigation measures are usually based on the technical analysis. Appendix D lists sample mitigation measures for air quality. South Coast AQMD has also developed a list of standard mitigation measures and control efficiencies, which is available at: http://www.aqmd.gov/home/rules-compliance /ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would reduce but not avoid impacts, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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3.4 BIOLOGICAL RESOURCES

3.4.1 Background

Vegetation and Land Cover Types

Vegetation and land cover types that occur within the City are shown in Figure 3.4-1, *Vegetation and Land Cover Types*, and were identified through the most current (2015) vegetation mapping from the Nature Reserve of Orange County. Based on this information, 17 types occur within the City:

- Annual Grassland
- Perennial Grassland
- Annual Grassland/Perennial Grassland
- Coastal Oak Woodland
- Mixed Chaparral
- Coastal Scrub
- Lacustrine
- Riverine
- Barren
- Riverine, Barren
- Estuarine, Lacustrine, Riverine
- Valley Foothill Riparian
- Eucalyptus
- Fresh Emergent Wetland
- Saline Emergent Wetland
- Orchard-Vineyard, Evergreen Orchard, Irrigated Row and Field Crops
- Urban

Sensitive Biological Resources

Sensitive biological resources include:

- Sensitive vegetation communities
- Special status plant species
- Special status wildlife species
- Wildlife movement corridors
- Wetland/riparian resources

Many sensitive biological resources are known to occur or have the potential to occur within the City based on historical data for the region identified through a query of the California Natural Diversity Database (CNDDB) and US Fish and Wildlife Service (USFWS) database, the National Hydrography Dataset, and/or the presence of potentially suitable habitat within the City. Figure 3.4-2, *Special Status Plant and Wildlife Species and Critical Habitat*, identifies potential biological resources in the City.

Wildlife Corridors

Wildlife corridors are essential to maintain populations of healthy and genetically diverse plant and wildlife species. The Irvine Open Space Initiative created a framework to preserve large, contiguous open space areas as phased master-planned growth occurred in other areas of the City. The Irvine Open Space Preserve, as it now is known, protects more than 93,000 acres of land from the "mountains to the sea," linking the Cleveland National Forest, San Joaquin Wildlife Sanctuary, Laguna Coast Wilderness Park, and other resources. The City has committed to protect and manage the Irvine Open Space Preserve consistent with Orange County's Central-Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). Of the NCCP/HCP acres in Irvine, 10,587 are designated for the NCCP habitat reserve system, and 813 acres are nonreserve lands called special linkages. The special linkages have biological value that enhance connectivity between elements of the larger reserve system. The City's portion of the

NCCP habitat reserve system and the NCCP special linkages in the City are shown on Figure 3.4-3, *Biological Resources and NCCP Areas*.

Figure 3.4-3 also identifies several wildlife corridors. Hicks Canyon, Rattlesnake Canyon, Loma Ridge, Limestone Canyon, and upper Borrego Canyon form wildlife corridors that stretch to the Cleveland National Forest. Wildlife corridors are also preserved along the Eastern Transportation Corridor at Agua Chinon and the SR-241/133 interchange. Historically, a wildlife corridor also connected lands in Irvine's northern sphere (e.g., Santiago Hills) to coastal lands. In 2013, the Irvine City Council adopted the Irvine Wildlife Corridor Plan, taking a step toward creating a wildlife corridor that would link protected lands in the Laguna Coast to wilderness areas that include the Cleveland National Forest, Whiting Ranch, and Limestone Canyon.

Wetland and Riparian Resources

All wetland and riparian resources must be protected according to federal, State, and local regulations. These potential jurisdictional resources in the City include streams/rivers, lakes/ponds, reservoirs, inundation areas, canals/ditches, and associated habitats (coast live oak woodland; estuarine, lacustrine, riverine; fresh emergent wetland; lacustrine; riverine; riverine, barren; saline emergent wetland; and valley foothill riparian). The major wetlands/waterways in the City include San Diego Creek, Peters Canyon Wash, and San Joaquin Wildlife Sanctuary.

Relevant Planning Programs

Several local, State, and federal regulations may apply to future projects that are proposed within the City. These include, but are not limited to:

Federal

- National Environmental Policy Act
- Federal Endangered Species Act of 1973 (16 United States Code [USC] §§ 1531 et seq.)
- Clean Water Act of 1972 (33 USC §§ 1251 et seq.)
- Migratory Bird Treaty Act of 1918 (16 USC §§ 703–711)
- Bald and Golden Eagle Protection Act (16 USC § 668)
- Fish and Wildlife Coordination Act (16 USC 661 §§ et seq.)
- Floodplain Management and Protection of Wetlands (42 Code of Federal Regulations [CFR] § 26961, 52 CFR § 34617)
- Invasive Species (64 CFR § 6138)

Figure 3.4-1

VEGETATION AND LAND COVER TYPES

LEGEND

- Annual Grassland
- Annual Grassland, Perennial Grassland
- Barren
- Coastal Oak Woodland
- Coastal Scrub
- Estuarine, Lacustrine, Riverine
- Eucalyptus
- Fresh Emergent Wetland
- Lacustrine
- Mixed Chaparral
- Orchard-Vineyard, Evergreen Orchard, Irrigated Row and Field Crops
- Perennial Grassland
- Riverine
- Riverine, Barren
- Saline Emergent Wetland
- Urban
- Valley Foothill Riparian
- City Boundary
- Sphere of influence

Data from Alden Environmental, Biological Technical Report for Irvine General Plan Update, 2019.

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Figure 3.4-2

SPECIAL STATUS PLANT AND WILDLIFE SPECIES AND CRITICAL HABITAT

LEGEND

USFWS Critical Habitat
- coastal California gnatcatcher
- Riverside fairy shrimp

Special Status Plant and Animal Species

Plants
- Allen's pentachaeta
- chaparral ragwort
- Coulter's goldfields
- Coulter's saltbush
- Davidson's saltscale
- intermediate mariposa-lily
- many-stemmed dudleya
- mud nama
- San Bernardino aster
- southern tarplant
- Robinson's pepper-grass

Crustaceans
- Riverside fairy shrimp

Amphibians
- Coast Range newt
- western spadefoot

Mammals
- San Diego desert woodrat
- western mastiff bat

Reptiles
- coast horned lizard
- coastal whiptail
- orange-throated whiptail
- red-diamond rattlesnake
- western pond turtle

Birds
- American peregrine falcon
- burrowing owl
- California horned lark
- coastal cactus wren
- coastal California gnatcatcher
- Cooper's hawk
- ferruginous hawk
- grasshopper sparrow
- least Bell's vireo
- light-footed Ridgway's rail
- southern California rufous-crowned sparrow
- tricolored blackbird
- white-tailed kite
- yellow-breasted chat

- City Boundary
- Sphere of Influence

Data from Alden Environmental, Biological Technical Report for Irvine General Plan Update, 2019.

Miles
0
1

COI-45.0 : Figure 03.04-2 Species Status Plant and Wildlife Species Critical Habitat.mxd 2/17/2020

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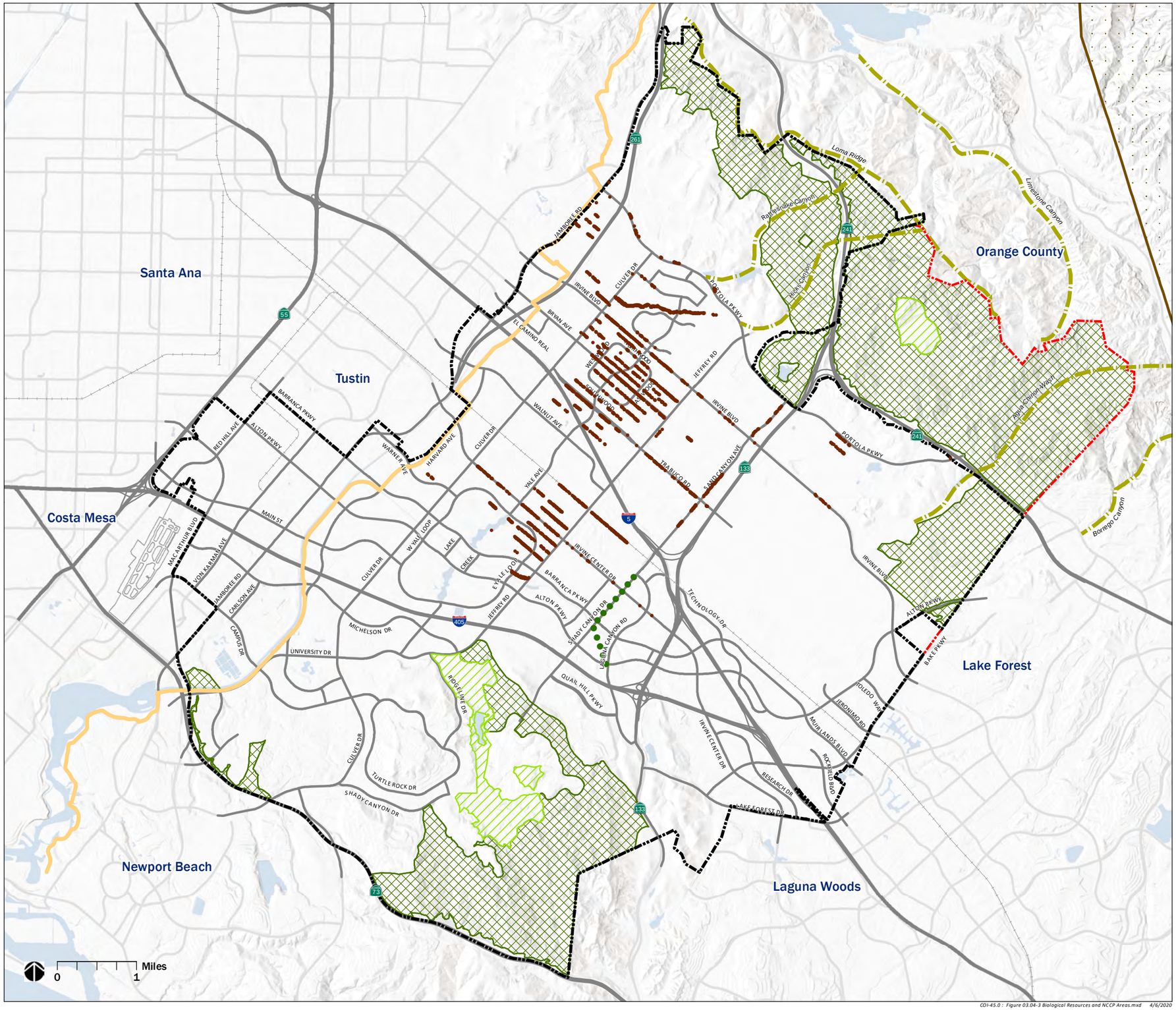
Figure 3.4-3

BIOLOGICAL RESOURCES AND NCCP AREAS



COI-45.0 : Figure 03.04-3 Biological Resources and NCCP Areas.mxd 4/6/2020

LEGEND

- Cleveland National Forest
- Mountains to Sea Trail
- WildlifeCorridors *(labeled in italics on map)*
- Publicly Maintained Eucalyptus Windrow
- Sand Canyon Oak Trees
- NCCP Habitat Reserve
- NCCP Special Linkage
- City Boundary
- Sphere of Influence

Data from Alden Environmental, Biological Technical Report for Irvine General Plan Update, 2019.
Data provided by the City of Irvine on 3/27/2020.

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State

- California Environmental Quality Act
- California Endangered Species Act (Fish and Game Code §§ 2050 et seq.)
- California Fish and Game Code
- California Porter-Cologne Water Quality Control Act
- California Natural Community Conservation Planning Program

Local

Continued preservation of large contiguous habitat areas is the key to preserving biodiversity and preventing additional species from becoming rare, endangered, or extinct. Open space areas in the City of Irvine, which include preservation areas, recreation areas, water bodies, agricultural areas, golf courses, and landfills, are shown in Figure 3.4-3.

The majority of biological habitat is found in the preservation areas. Federal and State laws and adopted County policies require the protection of natural habitats and associated wildlife and vegetation in recognition of their many values. The City of Irvine Municipal Code also has local requirements for development that prevent damage or harm to local biological resources. A example includes the City's Urban Forestry Ordinance (Municipal Code Title 5, Division 7, Chapter 4), which requires a permit to remove any significant tree on public or private land. Various conservation plans and natural habitat protection areas exist throughout the City (see Table 3.4-1).

Table 3.4-1
Biological Resource Plans That Affect Irvine

Name	*Involved Parties*	*History*	*Purpose/Goal*	*Implications*
Orange County Central and Coastal Natural Community Conservation Plan	County of Orange, CA Department of Fish and Wildlife, US Fish and Wildlife Service, Orange County Cities	In May of 1996, the City of Irvine, the County of Orange, various other cities, and landowners entered into an agreement to place certain lands within the NCCP Reserve and commit to certain responsibilities under this plan.	Preservation of entire biotic communities	The majority of the northeastern part of the City is part of the NCCP. Additional NCCP reserve lands also exist in other parts of the City (see Figure 3.4-3). Development is limited within the NCCP areas to "Covered Activities" and compatible uses. All proposals for development that are within the NCCP are required to meet these requirements and would be reviewed by the City prior to approval.

Table 3.4-1
Biological Resource Plans That Affect Irvine

Name	*Involved Parties*	*History*	*Purpose/Goal*	*Implications*
Local Coastal Program	Coastal Commission, Orange County Cities	Under the California Coastal Act, "environmentally sensitive area" denotes any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments	Protection of water quality and the biological productivity of coastal waters; avoidance and minimization of dredging, diking, and filling sediments; and mitigation of wetland impacts.	Implementation of Coastal Act policies are accomplished primarily through the preparation of a Local Coastal Program (LCP). The LCP is typically prepared and adopted by a municipality or county, and then reviewed and approved by the Coastal Commission.
Open Space Management and Conservation Plan	City of Irvine	Chapter 8-16 of the Zoning Code, Open Space Management and Conservation Plan, the City requires the preparation of such plans for qualified development projects.	Compliance with the Conservation and Open Space Element	Serve as the primary implementation tool for complying with biotic policies identified in biotic resources objectives of the Conservation and Open Space Element, the timing and phasing of mitigation measures, and the responsibilities for implementation.

The California Natural Community Database, administered by the California Department of Fish and Wildlife (CDFW), records citations of special status species organized by 7.5 minute quadrangle. The City of Irvine is in and/or adjacent to the Newport Beach, Tustin, Orange, Black Star Canyon, El Toro, San Juan Capistrano, and Laguna Beach quadrangles.

Natural Community Conservation Plan/Habitat Conservation Plan

The City of Irvine is located within the boundaries of the Central-Coastal NCCP/HCP, as shown in Figure 3.4-3, *Biological Resources and NCCP Areas*. Preparation of NCCPs was authorized by the Natural Community Conservation Act, California Fish and Game Code §§ 2800 to 2840 (NCCP Act), which was signed into law in 1991. The Reserve areas, as well as areas identified for development, are identified in the NCCP/HCP. The NCCP/HCP is a state program designed to protect critical habitat through a comprehensive management and conservation program while at the same time providing for reasonable economic development. The NCCP Act is designed to protect important habitat before it becomes necessary to declare certain species that use that habitat as endangered. It provides an alternative to protecting species on a "single species basis" as with the Federal Endangered Species Act (FESA) (16 USC §§ 1531 et seq.) and the California Endangered Species Act (CESA) (Fish and Game Code §§ 2050 et seq.). Under the

NCCP Act, CDFW is responsible for implementing process planning and conservation guidelines for NCCP programs.

In 1982, FESA was amended to give private landowners the ability to develop HCPs pursuant to Section 10(a) of FESA. Upon development of an HCP, the USFWS can issue incidental-take permits for listed species where the HCP specifies, at minimum: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

In 1996, an environmental impact report/environmental impact statement (EIR/EIS) for the Orange County Central-Coastal Subregion NCCP/HCP was prepared with the County of Orange and the USFWS as lead agencies, and the CDFW as a responsible agency. Based on the Central-Coastal NCCP/HCP, the USFWS and the CDFW authorized "take" of "identified species" and approved modification of "covered habitats" under the state and federal ESAs and the federal Migratory Bird Treaty Act. Following certification of the EIR/EIS, the participating agencies and landowners, including the City and the Irvine Company, signed an implementation agreement. The implementation agreement set forth the implementation requirements for the Central-Coastal NCCP/HCP, including requirements related to dedication, creation, and management of a 37,000-acre Nature Reserve System as well as procedures and minimization measures related to take of identified species and modification of habitat in areas designated for development.

Under the Central-Coastal NCCP/HCP, it was determined that the Reserve design incorporated sufficiently large habitat areas and connectivity for purposes of wildlife movement that impacts of development within development areas designated by the NCCP/HCP do not require further mitigation. It was also determined that the Reserve design adequately addressed buffer and edge considerations, and impacts of development within designated development areas do not require further mitigation.

Initiative Resolution 88-1 and General Plan Amendment 16

Irvine Ballot Measure C integrated the land use and conservation and open space elements together through the development entitlement process with a purpose of providing permanent protection of open space by means of public ownership. When this program, known as the "Implementation Action Program," is complete, all major open space preservation areas (whether under the ownership of the Irvine Company or its successor or not) are required to ensure the appropriate balance of development and open space. The development areas, preservation areas, and spines, which connect preservation areas, of the Implementation Action Program are shown on Figure 3.4-3, *Biological Resources and NCCP Areas*. Pursuant to the NCCP/HCP, no additional mitigation is required of participating land owners for impacts to identified species and their habitat or for species residing in non-CSS habitats (i.e., covered habitats). Nonparticipating land owners may mitigate impacts to biological resources by (1) onsite avoidance of take; (2) satisfaction of the applicable FESA or CESA provisions under the consultation and permit provisions of these statutes; or (3) payment of a mitigation fee to the nonprofit management corporation as provided for in the NCCP/HCP and implementation agreement.

3.4.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for biological resources. A project would normally have a significant effect on the environment if the project would:

a. Have a substantial effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

c. Have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.4.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The biological resources environmental analysis should look at the questions in Section 2.1. Additional questions that pertain specifically to biological resources are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

The existing setting section of biological resources analysis should describe the existing natural character of the project site. It should take into account waterways, vegetation, and habitat.

- Is the project site developed or vacant? If it is vacant, is it vegetated?

- Does the site have habitat used by native species in the area, or, do native species exist onsite? (Reference existing CEQA documents or biological studies for the area if available.)

- Is the site planned for development by Orange County's Central-Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan?

Step 2: Project Impacts

Once a project description has been established for a proposed project, the potential for biological resource impacts to occur can be determined. The potential for impacts is based on the following questions, provided

to supplement the questions under Step 2 of the "General Approach for Determining Significance Flow Chart" in Chapter 1.

- If the site has biological resources on the project site, would the proposed development affect these resources through either construction or operational activities?

- Does the proposed project require the approval of permits by California Department of Fish and Wildlife, US Fish and Wildlife Service, or the Santa Ana Regional Water Quality Control Board?

Step 3: Apply Plans, Policies, and Programs

Appendix C summarizes the PPPs for the City of Irvine. There are a number of standard conditions, municipal and zoning code requirements, and state or federal regulations that projects must follow in the City of Irvine. Any site disturbance that affects biological habitat must obtain written clearance from the jurisdictional agency and approval from the Community Development Director prior to the issuance of grading permits.

Step 4: Determine Impact Significance

If the application of PPPs does not sufficiently reduce potentially significant biological resource impacts, the remaining impacts are potentially significant.

Step 5: Formulate Mitigation

Mitigation measures for biological resources are included in the implementation program for the Central-Coastal Subregion NCCP/HCP. Additional mitigation measures, if necessary, should follow the requirements laid out in the "General Approach for Environmental Analysis" flow chart in Figure 1-1.

Step 6: Determine Significance after Mitigation

As described in the flow chart in Chapter 1, a determination of project impacts after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented should be made. Any remaining significant and unavoidable impacts shall be identified. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite its significant and unavoidable impacts.

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3.5 CULTURAL RESOURCES

The cultural resources analysis per CEQA is broken into two categories: historical resources and archaeological resources. For the purposes of CEQA analysis, historical and archaeological resources are defined in Table 3.5-1.

Table 3.5-1
Types of Cultural Resources and Definitions

Historical	Buildings, objects, structures, areas, sites that are historically important as defined by Section 15064.5 of the State CEQA Guidelines.
Archaeological	Artifacts, structural remains, and human remains belonging to an era of prehistory.

A total of 379 previously recorded cultural resources are located within City boundaries and are summarized in Table 3.5-2.

Table 3.5-2
Cultural Resources within the City of Irvine by Type

Resources Type	*Quantity*
Prehistoric Site	216
Prehistoric Isolate	85
Multi-component Site	9
Multi-component Isolate	1
Unknown Isolate	1
Historic Resource	62
Historic Site	2
Historic Isolate	3
Grand Total	**379**

Source: Cogstone, 2019, June. Paleontological and Cultural Resources Assessment for the City of Irvine General Plan Update, Phase II, City of Irvine, Orange County, California.

3.5.1 Background

Historical Resources

Historical resources must meet the criteria defined in the California Code of Regulations (CCR) § 15064.5 in order to be considered significant resources. Per CEQA, historic resources are defined as:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resources Code (PCR) § 5024.1; 14 CCR §§ 4850 et seq.).

(2) A resource included in a local register of historical resources, as defined in PRC § 5020.1(k) or identified as significant in an historical resource survey meeting the requirements of PRC § 5024.1(g), shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the

preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. 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 (PRC § 5024.1; 14 CCR § 4852), including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) 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

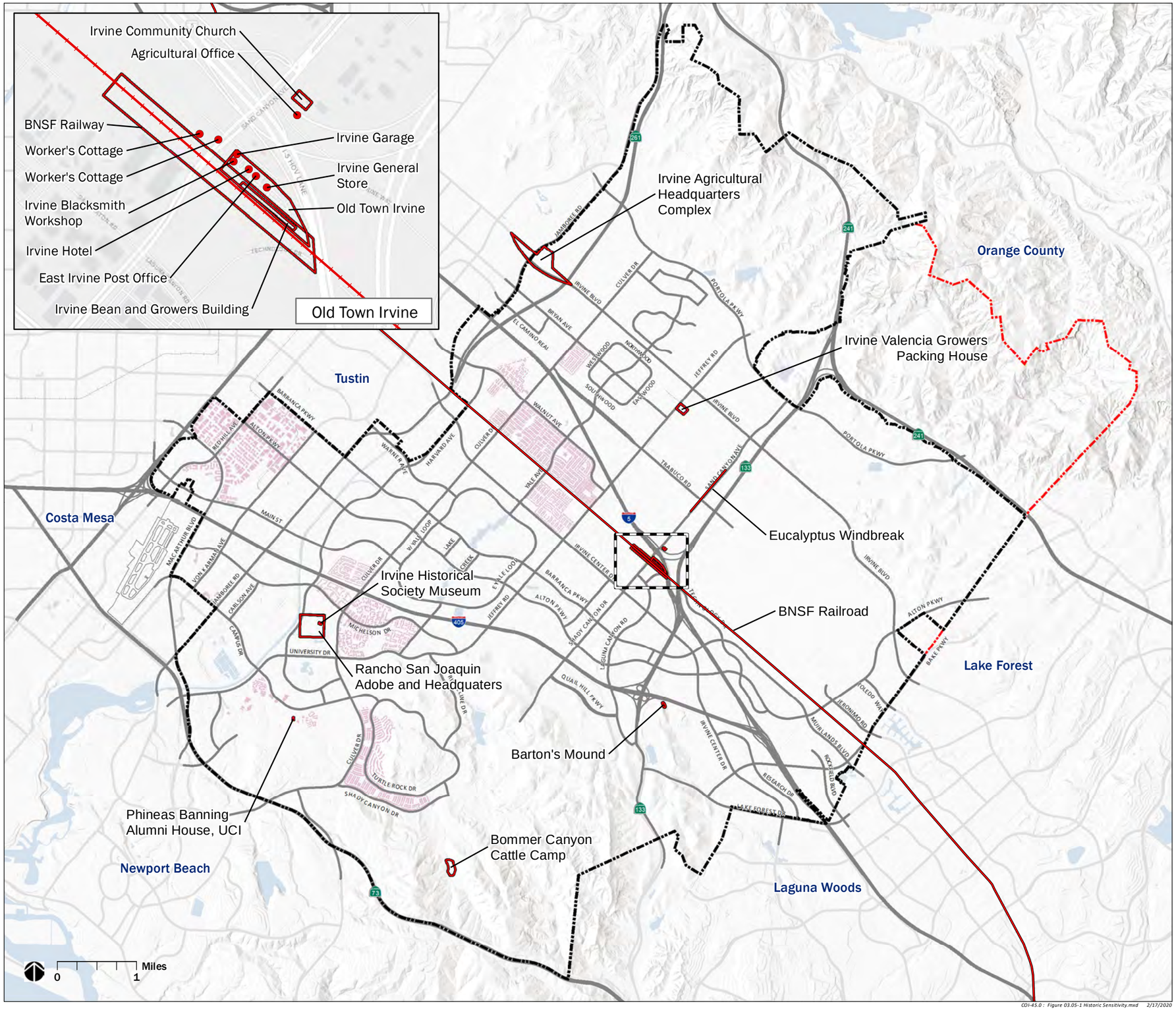
(D) Has yielded, or may be likely to yield, information important in prehistory or history.

(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 PRC § 5020.1(k)), or identified in an historical resources survey (meeting the criteria in PRC § 5024.1(g)) does not preclude a lead agency from determining that the resource may be a historical resource, as defined in PRC § 5020.1(j) or § 5024.1.

Resources that are identified in the City of Irvine as having historic significance are shown in Figure 3.5-1, *Historic Sensitivity*. Historical resources include current and former locations of historic buildings, historical archaeological sites (often near historic use areas) and the location of extant historic homes more than 45 years old. Old Town Irvine has the highest number of historic buildings. Other resources north of I-405 include the railroad, a eucalyptus windbreak, Valencia Growers Packing House, and the Irvine Agricultural Headquarters Complex. South of I-405 they include the Rancho San Joaquin Adobe, the San Joaquin Gun Club, Phineas Banning House, Bommer Canyon Cattle Camp, and Barton's Mound. Four buildings within the City are listed on the National Register of Historic Places and the California Register of Historic Resources. Eight properties are listed on the California Historical Resources Inventory. One area has a California Historical Landmark plaque. Three areas have California Point of Historical Interest plaques. The Orange County Parks lists the Irvine Ranch Historic Park. The City of Irvine lists 19 historically important properties. Refer to Table 3.5-3.

Figure 3.5-1

HISTORIC SENSITIVITY



LEGEND

- Historic Resource - Points
- Historic Resources - Line
- Historic Resources - Polygon
- Building 45 years or older
- City Boundary
- Sphere of Influence
- Old Town Irvine Area

Data from Cogstone, Paleontological and Cultural Resources Assessment for the City of Irvine General Plan Update, 2019.

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Table 3.5-3
Cultural Resources in the City of Irvine

Resource Name	*Date Listed*	*Source*
Frances Packing House	8/2/1977	National Register of Historic Places (NRHP) (NRL#:77000319)
	--	California Register of Historic Resources (CRHR)
Irvine Bean and Growers Association Building	1/13/1986	NRHP (NRL#:86000068)
	--	CRHR
Irvine Blacksmith Shop	3/20/1986	NRHP (NRL#:86000452)
	--	CRHR
Christ College Site	4/16/1993	NRHP (NRL#:93000300)
	--	CRHR
	--	California Historical Resources Inventory (CHRI)
Tustin USAR Center	--	CHRI
Val Verde Sportsmen's Club	--	CHRI
The Echberria Home	--	CHRI
Buffalo Ranch/ Urnabus Square	--	CHRI
	--	City of Irvine Historic Resources List
Agricultural Shed	--	CHRI
Transi Housing; Irvine Hotel	--	CHRI
South Coast Gun Club	--	CHRI
Old Town Irvine	11/8/1991	California Historical Landmarks (Plaque # 1004)
Irvine Bean and Grain Growers Building	8/8/1991	California Point of Historical Interest (CPHI) (Plaque #: P753)
Irvine Historical Society Museum/ Rancho San Joaquin Headquarters	5/31/1984	CPHI (Plaque #: P630)
Irvine Park	9/1/1976	CPHI (Plaque #: P485)
Irvine Ranch Historic Park	--	Orange County Parks
Lambert Reservoir	--	City of Irvine Historic Resources List
First Irvine Office/ Ranch Headquarters	--	City of Irvine Historic Resources List
Irvine Family Home Site and Gardens	--	City of Irvine Historic Resources List
C.F. Kraus Residence	--	City of Irvine Historic Resources List
Irvine Employee Housing	--	City of Irvine Historic Resources List
Irvine Community Center/ Public School	--	City of Irvine Historic Resources List
Irvine Bean Warehouse	--	City of Irvine Historic Resources List
East Irvine Garage and Service Station	--	City of Irvine Historic Resources List
A.T.S.F. Station	--	City of Irvine Historic Resources List
East Irvine Post Office/ General Store/ Blacksmith Shop	--	City of Irvine Historic Resources List
Dirigible Hangars "Lighter Than Air" Base	--	City of Irvine Historic Resources List
Live Oaks-Laguna Canyon Road	--	City of Irvine Historic Resources List
Site of Michelson Vacuum Tube (Speed of Light Experiments)	--	City of Irvine Historic Resources List
First Home in University Park	--	City of Irvine Historic Resources List
French Hill-AKA, Turtle Rock	--	City of Irvine Historic Resources List

Table 3.5-3
Cultural Resources in the City of Irvine

Resource Name	*Date Listed*	*Source*
Martin Airport (original site of Orange County Airport)	--	City of Irvine Historic Resources List
San Joaquin Marsh/Peat Bogs	--	City of Irvine Historic Resources List
Bommer Canyon Cattle Camp	--	City of Irvine Historic Resources List

Source: Cogstone, 2019, June. Paleontological and Cultural Resources Assessment for the City of Irvine General Plan Update, Phase II, City of Irvine, Orange County, California.

Archaeological Resources

The largest concentrations of archaeological sites in the City of Irvine exist in the Upper Newport Bay and the Santiago and San Joaquin Hills. The majority of archaeological resources in the City of Irvine reflect the historical settlements and activities of the Gabrieleno people (also known as the Tongva), who began occupying the area approximately 3,000 years ago. Archaeological resources can be found whenever a proposed project involves ground disturbance in areas that have previously been undisturbed or where ground disturbance would penetrate deeper into the ground than previous work. Refer to Figure 3.5-2, *Prehistoric Sensitivity*.

Senate Bill 18 Tribal Consultation

California Senate Bill (SB) 18 (Burton, D-San Francisco) helps tribes and jurisdictions define resources and sacred areas and incorporates protection of these places into the General Plan process. It is the first law in the nation to mandate tribal consultation at the local level. SB 18 consultation applies to the adoption and amendment of general plans proposed on or after March 1, 2005. SB 18 consultation is a "government to government" interaction between tribal representatives and representatives of the local jurisdiction.

SB 18 Consultation Process

- Once a local government initiates a proposal to adopt or amend a general plan, the local government must send a written request to the Native American Heritage Commission asking for a list of tribes to consult.

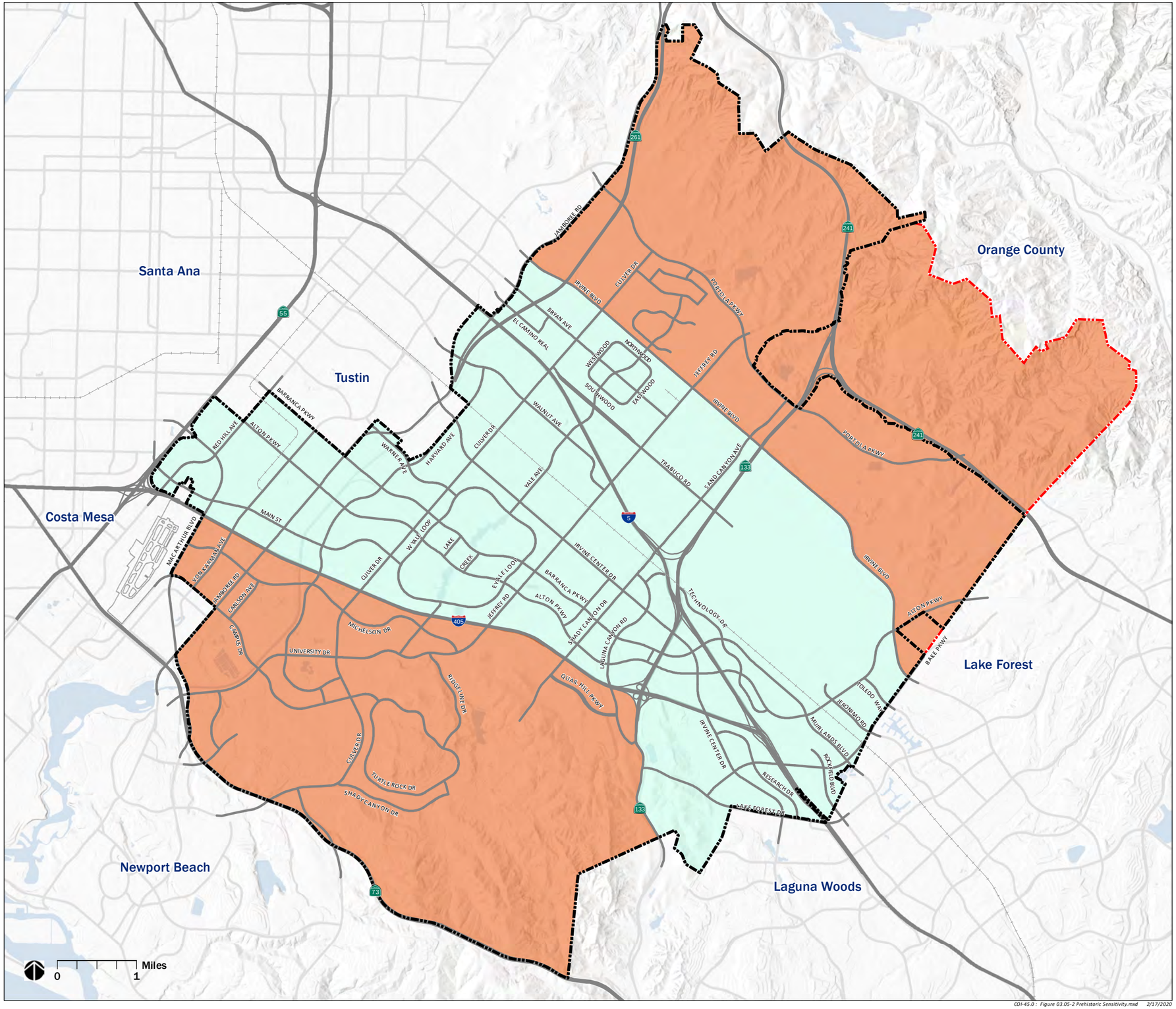
- Requests should clearly state that the local government is seeking information about tribes that are on the "SB 18 Tribal Consultation List."

- The Native American Heritage Commission is mandated to provide local governments with a written contact list of tribes in the local government's jurisdiction in 30 days.

Since the majority of development in the City of Irvine is within an existing planning area, there would be few development proposals that would require SB 18 consultation. However, a project that requires a general plan amendment would trigger SB 18 consultation.

Figure 3.5-2

PREHISTORIC SENSITIVITY



CDI-45.0 : Figure 03.05-2 Prehistoric Sensitivity.mxd 2/17/2020

LEGEND

Prehistoric Sensitivity
- Highly Sensitive
- Less Sensitive
- City Boundary
- Sphere of Influence

Data from Cogstone, Paleontological and Cultural Resources Assessment for the City of Irvine General Plan Update, 2019.

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Assembly Bill 52 Native Americans: California Environmental Quality Act

California Assembly Bill (AB) 52 (Gatto) specifies that a project that causes a substantial adverse change in the significance of a tribal cultural resources may have a significant effect on the environment. AB 52 requires that a lead agency consult with California Native American tribes that are traditionally and culturally affiliated with geographic areas and that request notification. AB 52 applies to projects that have a notice of preparation or a notice of negative declaration or mitigated negative declaration on or after July 1, 2015. This bill also required the separate consideration of tribal cultural resources in the CEQA thresholds.

AB 52 Consultation Process

- Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to California Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed project and have requested to the lead agency, in writing, to be informed of projects.

- Such California Native American tribes have 30 days of receipt of formal notification to request consultation. Prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project, the lead agency must begin consultation with.

Any project within the City of Irvine that requires a notice of preparation, mitigated negative declaration, or negative declaration requires AB 52 consultation.

3.5.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for cultural resource impacts. A project would normally have a significant effect on the environment if the project would:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5.

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

3.5.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The cultural resources environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to cultural resources are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

The existing setting section of cultural resources analysis should include a description of any known historic or archaeological resources on or near the project site. It should also provide a brief history of the

site and area, including a description of any previous cultural studies that have been completed on or near the site. The following questions are meant to help focus the existing setting discussion for cultural resources.

- Is the proposed project on or near a site that contains a historic resource, as defined by CCR § 15064.5 or on Table 3.5-2?

- What cultural studies have been previously been completed for the project site or the surrounding area? Consult the environmental documentation and supporting cultural resource studies (if available) that have been completed for the planning area in which the project site is located.

Step 2: Project Impacts

Once a project description has been established for a proposed project, the potential for impacts to cultural resources to occur can be determined. The potential for impacts is based on the following questions, provided to supplement the questions under Step 2 of the "General Approach for Determining Significance Flow Chart" in Chapter 1.

- If the site has archaeological resources as identified previously on the project site, would the proposed project involve ground disturbance that affects these resources?

- Does the proposed project require the disturbance of a historic resource?

Step 3: Apply Plans, Policies, and Programs

The City requires an archaeologist to be on call during ground-disturbing activities when there is potential for resources to be uncovered. The arrangements for the archaeologist to be available for consultation must be completed prior to the first preliminary or precise grading permit is issued by the City (Standard Condition 2.5). Consult Appendix C for additional PPPs applicable to cultural resources.

Step 4: Determine Impact Significance

If cultural or historical resources are on the project site, the level of significance of the impact to the resource is dependent on:

- The location of the resource in relation to proposed site disturbance.

- The importance of the resource to local and regional history.

Typically, when it has been determined that there is a potential for resources to exist onsite, a cultural resources study is prepared that contains technical analysis of archaeological and/or historic resources. This study can help determine the significance of impacts. Also, any CEQA documents and cultural reports that currently exist for the planning area in which the project is located can also help determine the level of significance to a cultural resource.

Step 5: Formulate Mitigation

Mitigation measures to reduce cultural resource impacts either require the removal of the cultural resource from the project site, when possible, complete avoidance of the resource; documentation of the cultural

resource; or incorporation of the resource into the proposed project. Although not included as a mitigation measure, during construction, an archaeologist must always be on call, as required by the City (Standard Condition 2.5).

Step 6: Determine Significance after Mitigation

As described in the flow chart in Chapter 1, a determination of project impacts after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented should be made. Any remaining significant and unavoidable impacts shall be identified. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite its significant and unavoidable impacts.

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3.6 ENERGY

Electricity in the City is supplied by Southern California Edison, and natural gas is supplied by the Southern California Gas Company.

3.6.1 Background

To reduce energy use, the City of Irvine has adopted an Energy Plan (2008) whose goals include:

- Involve 100 percent of Irvine residents and businesses in the Energy Plan.
- Irvine will reduce its energy use in buildings citywide 30 percent by 2015 compared to 2003 levels.
- Increase the percentage of renewable energy used by new buildings citywide.
    - 40 percent of the energy used by new buildings citywide will be derived from renewable sources by 2015
    - 60 percent of the energy used by new building city wide will be derived from renewable sources by 2020
- Reduce Greenhouse Gas (GHG) Emissions to:
    - 2000 levels by 2010
    - 1990 levels by 2020
    - 80 percent below 1990 levels by 2050

The City is in the process of preparing an update to the 2008 Energy Action Plan, known as the "Strategic Energy Plan." The Strategic Energy Plan is intended to create a sustainable, economically feasible, and actionable road map for City operations and to identify effective measures the Irvine community can implement to become energy efficient. The objectives of the Strategic Energy Plan are to analyze the City's baseline energy use to project future energy needs, evaluate priorities to meet those needs, and identify funding opportunities to implement the Plan. The Strategy Energy Plan is anticipated to be completed in April 2020.

Community Choice Energy (CCE) has been operating in California since 2002 following passage of Assembly Bill 117. CCE programs enable local government control over energy procurement to purchase power, set competitive rates, and collect revenue. The local utility still maintains the electricity grid, delivers energy, and bills customers. CCEs offer to businesses and residences automatic enrollment in their jurisdiction, with the ability for the customer to opt out and continue to purchase electricity from the utility. Customers have the option of choosing increased percentages of renewable energy. CCE programs in California generally procure and resell a power mix between 50 percent and 100 percent renewable energy to their customers. On September 25, 2018, the Irvine City Council approved initiating a feasibility study to assess the risks, challenges, and potential economic benefits for the community of implementing a CCE program in Irvine.

3.6.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for energy. A project would normally have a significant effect on the environment if the project would:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.6.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines and Appendix F of the State CEQA Guidelines for Energy Conservation. The general approach for environmental analysis is provided, followed by a more detailed narrative for each of the checklist thresholds discussed in this section.

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for energy should look at the questions provided in this flow chart. Questions are provided under each step of the "General Approach for Environmental Analysis" flow chart.

Step 1: Determine the Existing Conditions

The existing conditions section should identify electricity and gas providers. It should identify whether existing uses onsite use energy resources. If available, the analysis should provide an estimate of the existing energy use onsite.

Step 2: Project Impacts

In addition to the questions listed in the "General Approach to Environmental Analysis" in Chapter 1, the following questions can also be used to determine project impacts. According to Appendix F of the State CEQA Guidelines, the energy analysis should identify:

- Energy-consuming equipment and processes used during construction, operation, and/or removal of the project.
- Total energy requirements of the project by fuel type and end use.
- Energy conservation equipment and design features.
- Energy supplies that would serve the project.
- Total estimated daily vehicle trips or vehicle miles traveled generated by the project and the additional energy consumed by mode (e.g., gallons of diesel and gasoline).

There is no specified threshold for when a project would result in inefficient or wasteful use of electricity and natural gas use. Appendix F of the State CEQA Guidelines identifies a goal of conserving energy, which implies the wise and efficient use of energy. To determine the potential for a project to result in wasteful, inefficient, and unnecessary consumption of energy, the environmental analysis can consider the intensity of the project's energy requirements for each stage of the project (i.e., construction and operational phases); the effects of the project on local and regional energy supplies and on requirements for additional capacity; the effects of the project during peak and base period demands; compliance with energy standards; the project's effects on energy resources; and the project's anticipated transportation energy use requirements and its use of efficient transportation alternatives.

Step 3: Apply Plans, Policies, and Programs

New development (residential or nonresidential) in the City of Irvine is encouraged to implement building features that reduce energy use and meet the City's adopted Energy Plan.

- **Renewable Energy.** Chapter 3-31 of the Zoning Ordinance provides guidelines for installing solar energy equipment in a manner that is consistent with architectural and building standards.
- **Title 24.** New residential, office, or commercial structures must also meet requirements of the California Building Code regarding energy efficiency. This reduces overall building energy consumption.
- **Net-Zero Buildings.** The Long-Term Energy Efficiency Strategic Plan, adopted by the California Public Utilities Commission in 2008, provides a roadmap for commercial and residential buildings to achieve a net-zero building energy standard.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, these impacts are potentially significant. An impact is significant when the proposed project would result in wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures are meant to relate directly to the project impact and must be feasibly enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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3.7 GEOLOGY AND SOILS

Geological hazards may include but are not limited to surface fault rupture, ground shaking, landslides, liquefaction, and subsidence. Because the City of Irvine and surrounding region are generally considered geologically active, most projects will be exposed to some risk from geological hazards such as earthquakes. Although it is not possible to prevent or mitigate all geologic hazards, their destructive effects can be reduced to acceptable levels or avoided through appropriate site location, construction, and design.

In addition, the geology and soils section considers impacts to paleontological resources. Paleontological resources include fossilized geological materials, such as rock and mineral deposits, that represent a past geological era and may yield fossilized remains of past animals and plants.

3.7.1 Background

Relevant Planning Programs

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was signed into State law in 1972, as amended, primarily to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The act requires that cities and counties withhold development permits for sites within an Alquist-Priolo Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting. Pursuant to this act, structures for human occupancy are not allowed within 50 feet of the trace of an active fault.

The California Geological Survey categorizes active, potentially active, and inactive faults for the Alquist-Priolo Earthquake Fault Zoning Program. The criteria are presented in Table 3.7-1.

Table 3.7-1
Fault Activity Level and Criteria

Activity Level	*Criteria*
Active	Surface displacement within Holocene time (approximately the last 11,000 yrs.)
Potentially Active	Surface displacement of Quaternary-age deposits (last 1.6 million years)
Inactive	No displacement in the last 1.6 million years.

Figure 3.7-1, *Geologic Hazards*, shows the faults within the City of Irvine. No active surface faults are mapped or known to cross the City, and the City is not in an Alquist-Priolo Earthquake Fault Zone. The known regional active and potentially active faults that could produce the most significant ground shaking to properties within the City are the Newport-Inglewood (Offshore), Newport-Inglewood (LA Basin), and Whittier-Elsinore Faults, which are also designated as Alquist-Priolo Earthquake Faults (CGS 2010).

Additionally, it is thought that a blind thrust fault (i.e., a fault that does not extend to the surface) may exist beneath the San Joaquin Hills, based on indirect evidence.

The San Joaquin Hills blind thrust fault is recognized by the California Geological Survey to be active, although is not in an Alquist-Priolo Earthquake Fault Zone due to its blind nature. The fault runs roughly along the coastline south of Huntington Beach and north of Dana Point and is estimated to be at a depth of 1.25 miles below the surface; however, its precise location is unknown. Mapped blind thrust faults in California do not need to be considered in the Building Code design; however, blind thrust faults, including the San Joaquin Hills blind thrust, have been added to the state's database for probabilistic seismic hazard assessment.

Seismic Response Areas

The City is also broken up into five Seismic Response Areas (SRAs), which are areas that describe the different types of magnitudes of potential seismic hazards, making it possible to evaluate the risks of property damage, personal injury, and loss of vital services that may result from an earthquake. These areas are shown in Figure 3.7-2, *Seismic Response Areas*. A summary of the SRAs and their predominant characteristics is in Table 3.7-2.

Table 3.7-2
Seismic Response Areas of Irvine and Their Predominant Characteristics

Area	*Characteristics*	*Primary Hazard*
SRA 1	Soft soils, high groundwater	Liquefaction
SRA 2	Dense soils, deeper groundwater	Ground motion
SRA 3	Alluvium, shallow bedrock	Ground motion
SRA 4	Highlands, Slopes over 20 percent	Slope instability
SRA 5	Less stable geologic formations	Landslides

Historic Earthquakes

Historic earthquakes in the region include:

- 1857 Fort Tejon earthquake (magnitude 7.9) on the San Andreas fault
- 1933 Long Beach earthquake (magnitude 6.3) along the Newport-Inglewood Fault Zone
- 1987 Whittier Narrows earthquake (magnitude 5.9) on the Elysian Thrust Fault
- 1992 Landers earthquake (magnitude 7.4)
- 1994 Northridge earthquake (magnitude 6.6)

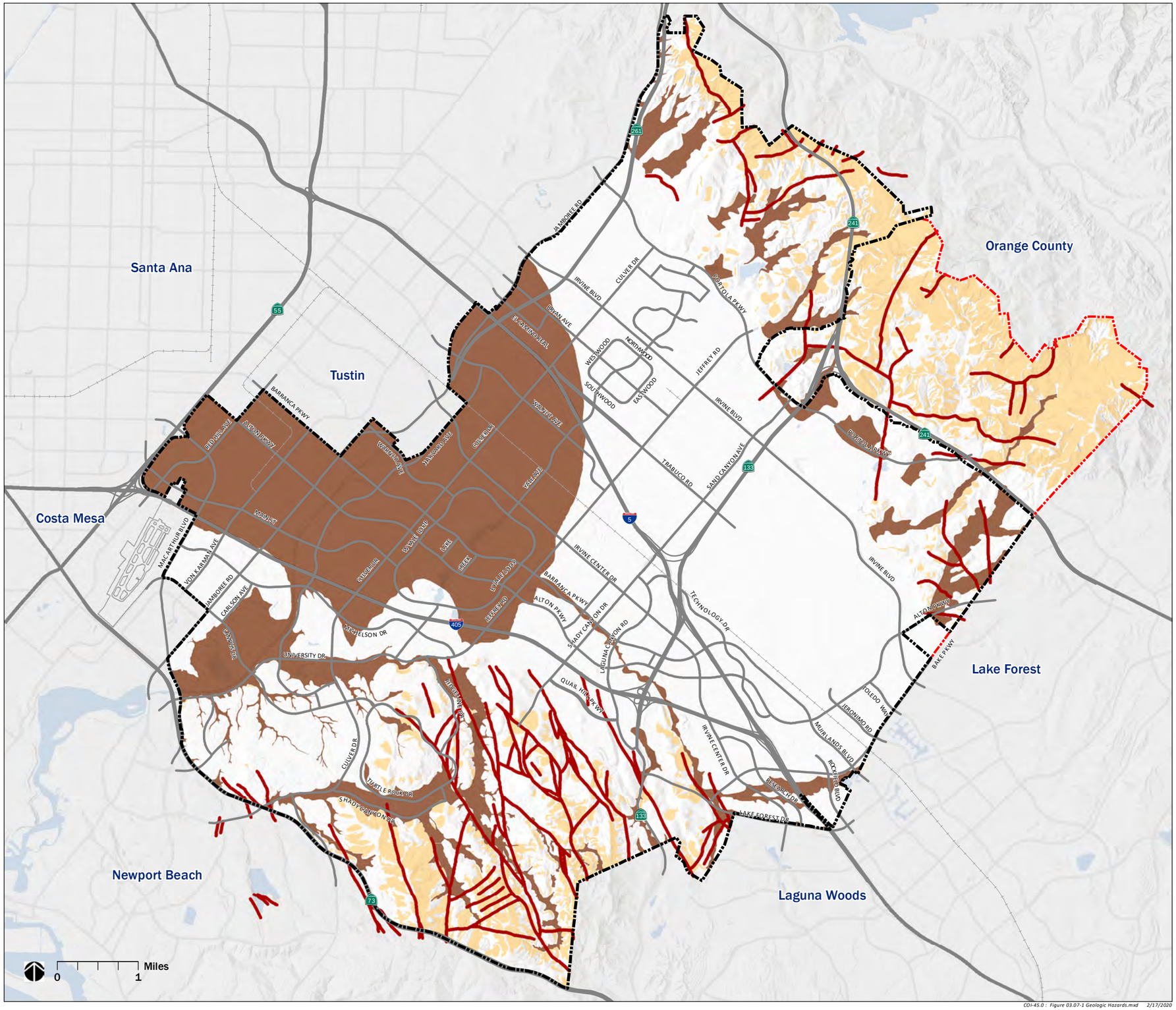
Other historic earthquakes in the region are provided in the Chronological Earthquake Index of the Southern California Earthquake Data Center's website (SCEDC 2019).

Geological Conditions Hazards in Irvine

Seismic-related and other geological hazards are described on Table 3.6-3 and shown in Figure 3.7-3, *Soil Hazards*. This table identifies what geological hazards may be present in the City of Irvine and describes where additional information can be obtained.

Figure 3.7-1

GEOLOGIC HAZARDS



COI-45.0 : Figure 03.07-1 Geologic Hazards.mxd 2/17/2020

LEGEND

- Earthquake-induced Landslide Zone
- Liquefaction Zone
- Faults
- City Boundary
- Sphere of Influence

Notes:
Liquefaction Zone: refers to areas where historic occurrences of liquefaction, or where local geological geotechnical, and groundwater conditions indicate a potential for permanent ground displacement such that mitigation as defined in the Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslide Zone: refers to areas where previous occurrence of landslide movement, or local topographic, geological, or geotechnical and subsurface water conditions indicate a potential for permanent ground displacement such that mitigation as defined in the Public Resources Code Section 2693(c) would be required.

Data from California Department of Conservation, Earthquake Zones of Required Investigation, 2016.

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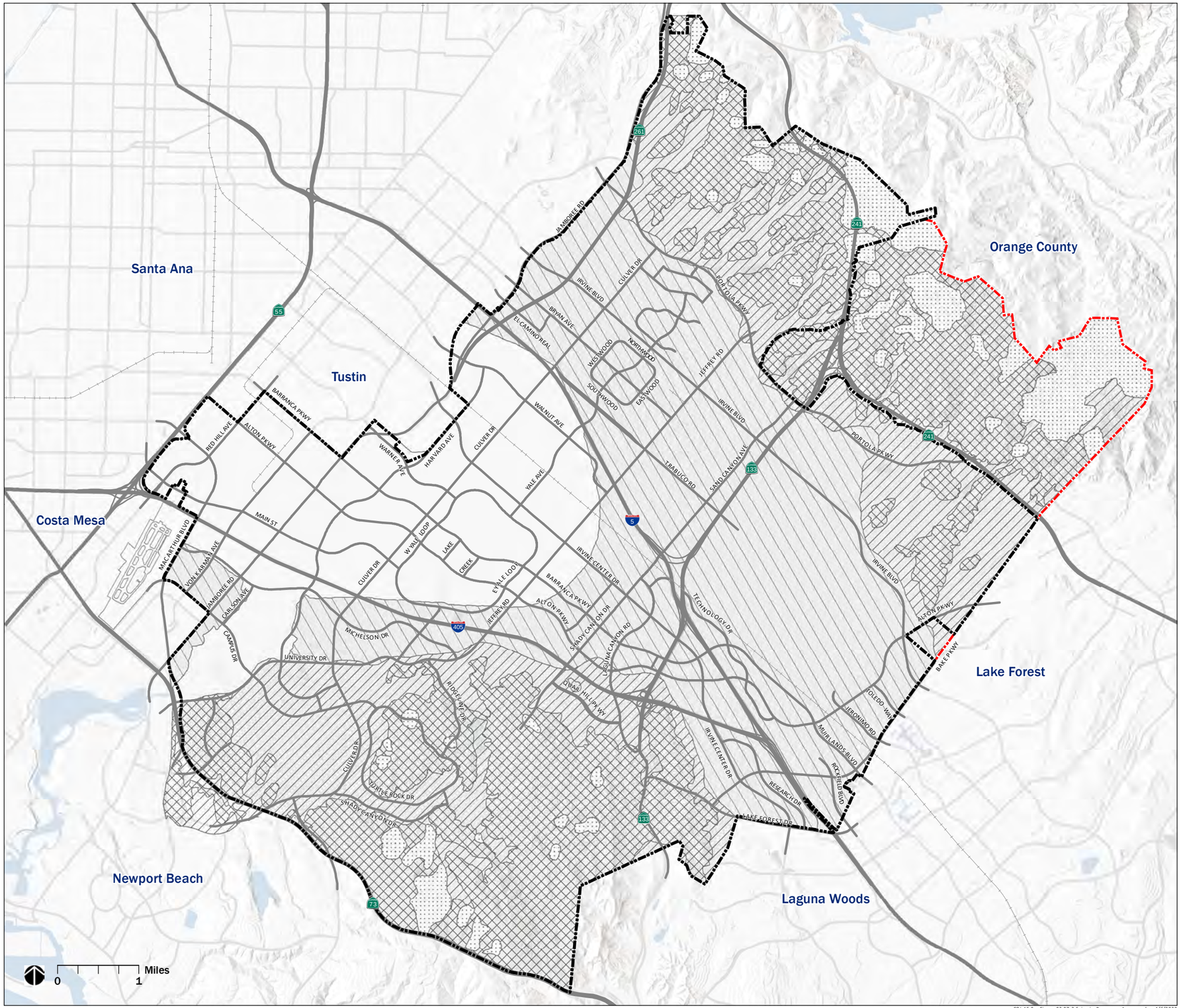
Figure 3.7-2

SEISMIC RESPONSE AREAS



COI-45.0 : Figure 03.07-2 Seismic_Response_Areas.mxd 4/6/2020

LEGEND

- SRA-1, Soft Soils/High Ground Water
- SRA-2, Denser Soils/Deeper Ground Water
- SRA-3, Alluvium/Shallow Bedrock
- SRA-4, Highlands Over 20 Percent Slope
- SRA-5, Less Stable Geologic Formations
- City Boundary
- Sphere of Influence

Notes:
Seismic Response Area (SRA): refers to designated areas that are used to identify the potential geologic and seismic risks in Irvine and associated land use, building, and design requirements for development.

Data provided by the City of Irvine on 6/30/2016

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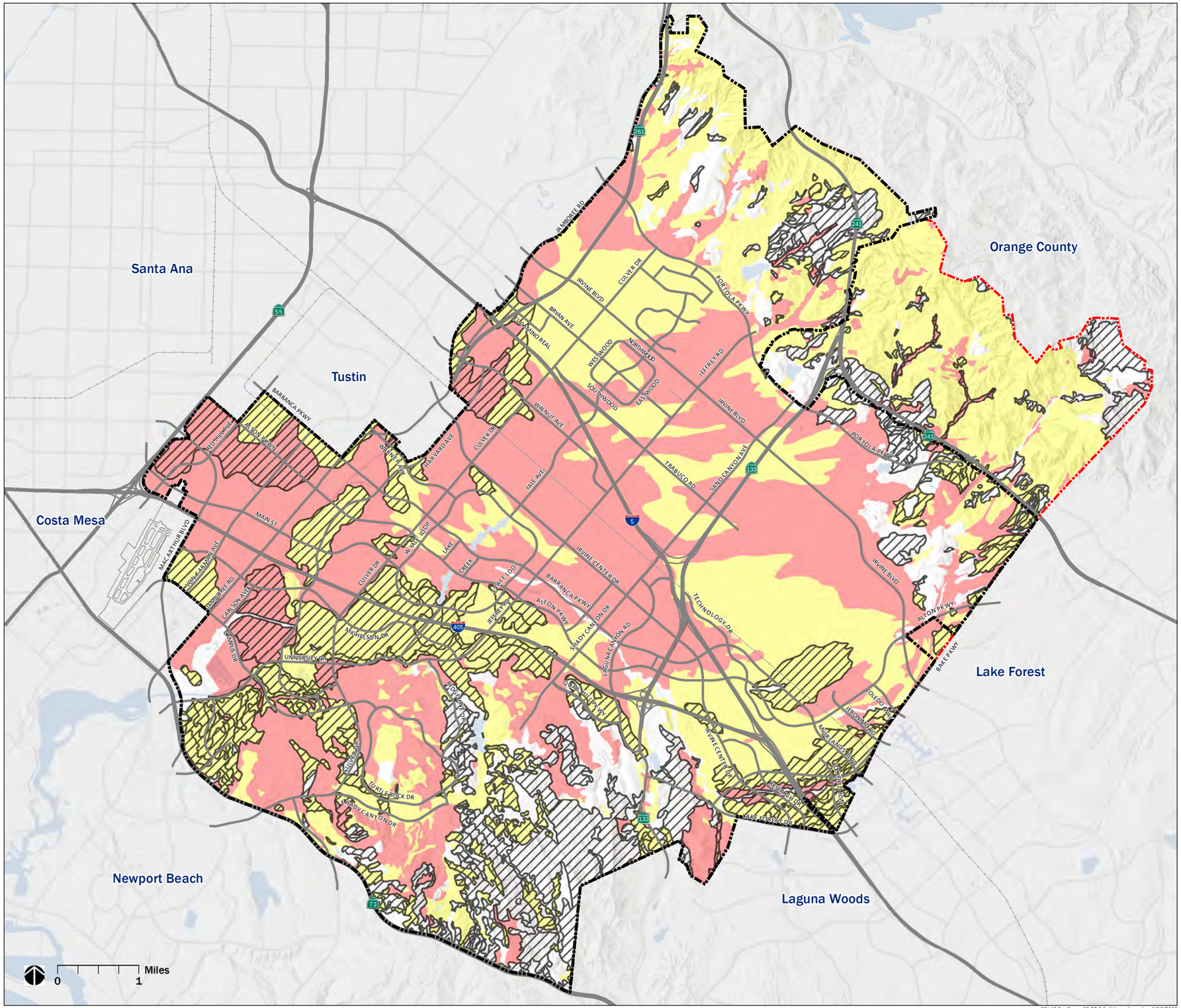
Figure 3.7-3

SOIL HAZARDS



COI-45.0 : Figure 03.07-3 Soil Hazards.mxd 2/17/2020

LEGEND

- Soil that is Moderately Corrosive to Concrete
- Soil that is Highly Corrosive to Steel
- Soil that is Moderately Corrosive to Steel
- City Boundary
- Sphere of Influence

Notes:
Risk of Corrosion refers to potential soil-induced electro-chemical or chemical action that corrodes or weakens concrete or uncoated steel. Areas delineated for corrosive soils may require mitigation as determined by the City Building Official.

Data from USDA, Web Soil Survey: Soil Data Explorer, 2003.

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Table 3.7-3
Potential Geological and Seismic Hazards in Irvine

Type	Process	Location/Soil Types	Hazards and Mitigation
Seismic Hazards			
Surface Fault Rupture	Displacement and cracking of the ground surface along a fault trace (either horizontal or vertical displacement)	Known regional active and potentially active faults within proximity of the City are the Newport-Inglewood (offshore), Newport-Inglewood (LA Basin), and Whittier-Elsinore Faults (see Figure 3.7-1) No active faults with the potential of surface rupture are mapped in the City.	Extensive structural damage, injury, loss of life. Mitigation: Investigation and planning in accordance with current building codes to locate structures outside of high risk zones.
Ground Shaking	Seismic ground shaking is associated with several geological hazards, including: • slope failure • liquefaction • soil settlement	Anywhere near earthquake faults. -	Substantial structural damage. Mitigation: Structural design and earthwork in accordance with applicable codes.
Liquefaction	Strong earthquake shaking causes sediment layers that are saturated with groundwater to lose strength and behave as fluid	Granular materials at depths of less than 50 ft. with silt and clay content of less than 30 percent and a relatively shallow groundwater table. Areas of potential liquefaction in Irvine are identified as Zones of Required Investigation for Liquefaction (State of California Seismic Hazard Zones) and area SRA 1 (see Table 3.7-2)	Structural and property damage. Mitigation: Geological investigation and geotechnical analyses to determine earthwork methods and structural design.
Seismically Induced Settlement	Dry dynamic settlement (above groundwater) and liquefaction (below groundwater)	Loose to moderately dense sandy soil	Structural and property damage. Mitigation: Geological investigation and geotechnical analyses to determine earthwork methods and structural design.

Table 3.7-3
Potential Geological and Seismic Hazards in Irvine

Type	*Process*	*Location/Soil Types*	*Hazards and Mitigation*
Geologic Hazards			
Mudflows, Landslides, and Slope Failures	Mudflows and landslides are perceptible downward movements of a mass of earth (soil and/or debris), rock or a combination of the two (human-caused or natural)	Some portions of the City are in a Zone of Required Investigation for Earthquake-Induced Landslides, as shown on the State of California Seismic Hazard Zones, Tustin and El Toro Quadrangle maps. Additionally, as shown in Figure 3.7-2, the areas within SRA 4 and SRA 5 are the most susceptible to slope instability and landslides (see Table 3.7-2).	Structural and property damage Mitigation: Geological investigation and adherence to recommended earthwork methods and procedures.
Subsidence and Unstable Soils			
Subsidence	Gradual settling or sinking of the ground surface with little or no horizontal movement. Can be human caused (overextraction of groundwater, gas, or oil) or natural (seismically induced)	Semiconsolidated sand and silt soils. Not common in Irvine.	Structural and property damage (above and below ground) Mitigation: Structural design in accordance with geotechnical engineer recommendations.
Expansive Soils	Considerable swelling and shrinking of soil when it is wetted and dried	Soils with significant amounts of clay particles. Very common in Irvine.	Structural and property damage. Mitigation: Earthwork (soil removal) and structural design (increased reinforcement) in accordance with the geotechnical engineer recommendations.
Compressible Soils	Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, as from a fill surcharge or a structure	Near-surface natural soils are usually most compressible. Deeper existing soils are generally compressed already.	Structural and property damage. Mitigation: Standard earthwork methods in accordance with the California Building Code.

Table 3.7-3
Potential Geological and Seismic Hazards in Irvine

Type	Process	Location/Soil Types	Hazards and Mitigation
Collapsible Soils	Grains of soil are realigned into a configuration of less volume when saturated with water, resulting in a rapid settlement under relatively low loads	Low-density, fine-grained granular soils	Structural and property damage. Mitigation: Geotechnical engineering analyses, earthwork, and structural design.
Corrosive Soils	Corrosive soils react chemically with the surfaces of metals and concrete, weakening these materials. Figure 3.7-3, *Soil Hazards*, shows the distribution of corrosive soils in the City.	Soils that contain water-soluble sulfate can damage concrete. Electrical resistivity, chloride content, and pH level are all indicators of the soil's tendency to corrode ferrous metals.	Damage to building components, sidewalks, and roadways. Mitigation: Building material design.
Erosion	Exposure of soil to wind or water, causing it to be blown or washed away. Can be natural or human caused (construction)	Any place that is exposed to wind and water or is under construction. Granular soils are most susceptible.	Structural damage (undermining foundations), clogging storm drains, and depositing dirt and mud. Mitigation: Adherence to the Storm Water Pollution Prevention Plan during earthwork and civil engineering design.

Paleontological Resources

The City of Irvine is divided into paleontological zones according to the likelihood of occurrence of important paleontological resources. Figure 3.7-4, *Paleontological Sensitivity Zones*, identifies areas within Irvine with low, medium, and high sensitivity.

Although it is more likely to encounter paleontological resources in areas with medium to high sensitivity, they may be found anywhere in the City. Construction activities that involve ground disturbance have the potential to disturb, destroy, or negatively affect paleontological resources. As with archaeological resources, the City requires a paleontologist and/or archaeologist to be on call during ground-disturbing activities when there is potential for resources to be uncovered. The arrangements for the paleontologist and/or archaeologist to be available for consultation must be completed prior to the first preliminary or precise grading permit is issued by the City (Standard Condition 2.5; see Appendix C of these Guidelines).

3.7.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for geological resources. A project would normally have a significant effect on the environment if the project would:

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
   ii. Strong seismic ground shaking.
   iii. Seismic-related ground failure, including liquefaction.
   iv. Landslides.

b. Result in substantial soil erosion or the loss of topsoil.

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

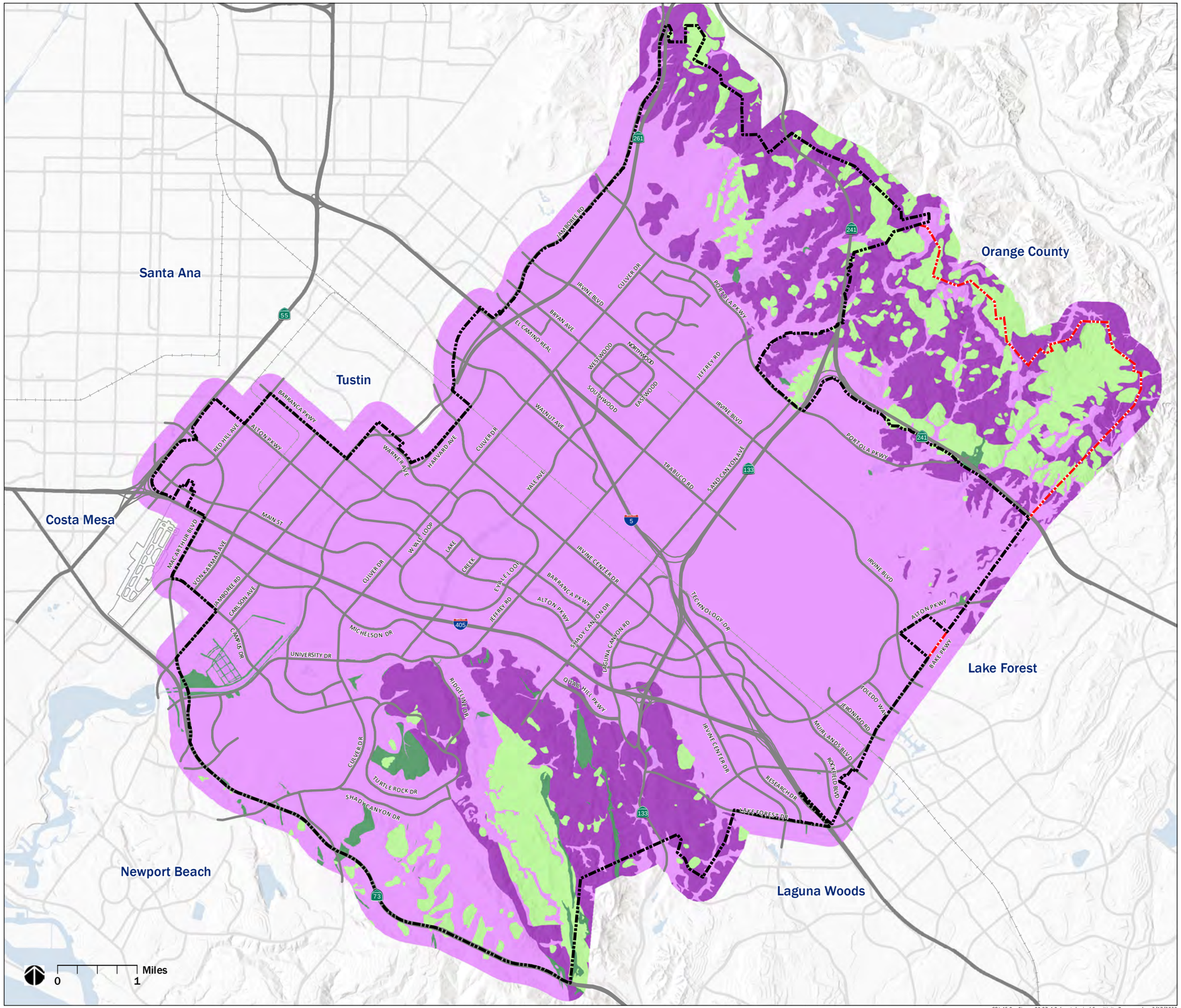
3.7.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The geological hazards and paleontological resources environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to geology and soils are provided in this section for each step of the flow chart.

Figure 3.7-4

PALEONTOLOGICAL SENSITIVITY ZONES



CDI-45.0 : Figure 03.07-4 Paleontological Sensitivity Zones.mxd 2/17/2020

LEGEND

Paleontological Sensitivity

- None
- Low
- Moderate
- High
- City Boundary
- Sphere of Influence

Data from Cogstone, Paleontological and Cultural Resources Assessment for the City of Irvine General Plan Update, 2019.

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Step 1: Determine the Existing Conditions

The existing setting section of geology and soils should include a description of the project site's terrain, soil types, and local faults as well as a description of potential paleontological resources. The following questions are meant to help focus the existing setting discussion for geology and soils.

- Although Irvine is not within an Alquist-Priolo fault zone, there are still faults present in the City, as shown in Figure 3.7-1. Are there faults present on or near the project site? Consult the program EIR and previous geotechnical reports if they are available for the project site.

- What are the soil types of the project site? Are any considered unstable?

- What potential paleontological resources may be present in the project vicinity?

Step 2: Project Impacts

Once a project description has been established for a proposed project, the potential for geology and soils impacts to occur can be determined. The potential for impacts is based on the following questions, provided to supplement the questions under Step 2 of the "General Approach for Determining Significance Flow Chart" in Chapter 1.

- Would the project place buildings on or near an active or potentially active fault?

- Does the project require new construction or development on unstable soils?

- Would the project result in ground disturbance in an area with potential paleontological resources?

Step 3: Apply Plans, Policies, and Programs

Appendix C lists PPPs that pertain to geology and soils. General requirements include obtaining site-specific geotechnical reports prior to the issuance of grading permits and development in accordance with the California Building Code. These requirements are meant to reduce geological hazards.

Step 4: Determine Impact Significance

When it has been determined that a project would be exposed to geological hazards, a geotechnical report should be prepared. The geotechnical report contains technical analysis of seismic and geological hazards related to the onsite soil types and terrain and risks related to the proximity to faults. It also includes a discussion of the City's building standards. As mentioned under Step 3, the City requires geotechnical reports to be prepared prior to the issuance of grading permits. For projects that do not require new construction (i.e., they consist of remodeling or renovating an existing building), a geotechnical report is not necessary. However, the building needs to be renovated to meet the City's building standards. The geotechnical study can help determine the significance of impacts. Also, any CEQA documents and paleontological reports that currently exist for the planning area in which the project is located can also help determine the level of significance of geology and soils impacts.

GEOLOGY AND SOILS

Step 5: Formulate Mitigation

Mitigation measures to reduce geology and soils impacts may require the implementation of a building setback from an identified fault (which should be identified in the geotechnical study); implementation of specific construction techniques; the avoidance of development on certain soil types; replacement or compaction of soil to make it more stable on the project site; or excavation, preservation, and curation of paleontological resources in a museum. The geotechnical and paleontological reports usually identify mitigation measures. The EIR may use or revise these mitigation measures so that they adequately reduce or avoid a significant impacts. As discussed in the flow chart in Chapter 1, the mitigation measures should be roughly proportionate to the potentially significant impact.

Step 6: Determine Significance After Mitigation

As described in the flow chart in Chapter 1, a determination of project impacts should be made after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented. Any remaining significant and unavoidable impacts shall be identified. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite the significant and unavoidable impacts.

3.8 GREENHOUSE GAS EMISSIONS

Climate change is a term that refers to the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. Certain gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3), absorb and emit infrared radiation and therefore have an effect on climate. These are greenhouse gases (GHGs), and while they comprise less than 0.1 percent of the total volume mixing ratio in dry air, they play an essential role in influencing climate (IPCC 2001). Table 3.8-1 lists the common GHGs and their relative Global Warming Potential (GWP) compared to CO_2.

Table 3.8-1
GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report (SAR) Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report (AR4) Global Warming Potential Relative to CO_2[1]	Fifth Assessment Report (AR5) Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	1	1	1
Methane[2] (CH_4)	21	25	28
Nitrous Oxide (N_2O)	310	298	265

Source: IPCC 1995, 2007, 2013.
Notes:
[1] Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.
[2] The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

3.8.1 Background

Assembly Bill 32

Assembly Bill (AB) 32, the Global Warming Solutions Act, was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 requires the state's global warming emissions to be reduced to 1990 levels by the year 2020.[1] At that time, it was projected that by 2020, GHG emissions in California would be approximately 596 million metric tons (MMT). (CARB 2008). In December 2007, the California Air Resources Board (CARB) approved a 2020 emissions limit of 427 MMT of CO_2e (carbon dioxide equivalence) for the state (CARB 2008).

In 2014, CARB completed a five-year update to the 2008 Scoping Plan, as required by AB 32. As part of the update, CARB recalculated the 1990 GHG emission levels with the updated Fourth Assessment Report GWPs. The 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit established in response to AB 32 are now slightly higher at 431 $MMTCO_2e$ (CARB 2014).

[1] AB 32 is based on Executive Order S-3-05, signed in 2005, which required state agencies to reduce GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.

GREENHOUSE GAS EMISSIONS

Senate Bill 32

In September 2016, Governor Brown signed Senate Bill (SB) 32, which established a GHG emissions target for year 2030 that is 40 percent below 1990 levels.[2] On December 24, 2017, CARB approved the 2017 Climate Change Scoping Plan Update, which outlines potential regulations and programs to achieve the 2030 target. The 2017 Scoping Plan establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030 (CARB 2017).

Senate Bill 375

In 2008, SB 375 was adopted to connect the GHG emissions reductions targets established in CARB's Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled and vehicle trips. Specifically, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 18 regions in California managed by a metropolitan planning organization (MPO). SCAG is the MPO for the southern California region, which includes the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

SB 375 also requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. SCAG adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) on April 7, 2016, which updates the 2012 RTP/SCS (SCAG 2016). The SCS sets forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). The SCS is meant to provide individual jurisdictions with growth strategies that, when taken together, achieve the regional GHG emissions reduction targets. However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS; instead, it provides incentives to governments and developers for consistency. If the SCS is unable to achieve the regional GHG emissions reduction targets, the MPO is required to prepare an Alternative Planning Strategy that shows how the GHG emissions reduction target could be achieved through other development patterns, infrastructure, and/or transportation measures.

CARB is required to update the targets for the MPOs every eight years. CARB adopted revised SB 375 targets for the MPOs in March 2018. The updated targets became effective on October 1, 2018, and are therefore applicable to the RTP/SCS update being initiated by SCAG for the 2020-2045 planning period. CARB's updated SB 375 targets for the SCAG region are an 8 percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent) (CARB 2018).

[2] SB 32 is based on Executive Order B-30-15, signed in 2015, which required state agencies to reduce GHG emissions to 40 percent below 1990 levels by 2030. Executive Order B-30-15 also requires state agencies to implement measures to meet the 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05.

3.8.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for greenhouse gas emissions. A project would normally have a significant effect on the environment if the project would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3.8.3 Determining Significance

General Approach

In determining the significance of a project's GHG emissions, the analysis should focus on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. The analysis should consider a time frame that is appropriate for the project. The analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Pursuant to the State CEQA Guidelines, a lead agency (i.e. the City of Irvine) should consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions compared to the existing environmental setting.

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions. In determining the significance of impacts, the analysis may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

Pursuant to CEQA Guidelines § 15064.4, an estimate of project-related GHG emissions must be included for all development projects in the City of Irvine. The GHG analysis must include substantial evidence to support the selection of the model or methodology used to estimate GHG emissions and should include an explanation of the limitations of the particular model or methodology selected for use. In general, a life-cycle emissions inventory need not be conducted for a development project because not enough information is typically available. For most projects, life-cycle GHG emissions estimates would be speculative. Black carbon emissions need not be included in the GHG analysis because CARB does not include it in the state's AB 32/SB32 inventory but treats this short-lived climate pollutant separately.

3. Environmental Impact Categories

GREENHOUSE GAS EMISSIONS

Step 1: Determine the Existing Conditions

The existing conditions section should include a discussion on the existing GHG emissions (if applicable) and applicable regulations for GHGs.

Modeling Tools

The most commonly used model to estimate GHG emissions for development projects is the California Emissions Estimator Model (CalEEMod), which was developed by the South Coast Air Quality Management District (AQMD) and maintained by the California Air Pollution Control Officer's Association (CAPCOA). It is recommended that future development projects use the latest model available when conducting a CEQA evaluation.

Step 2: Project Impacts

Currently, there is no statewide GHG emissions threshold that has been used to determine potential GHG emissions impacts of a project. Threshold methodology and thresholds are still being developed and revised by air districts in the state. Therefore this environmental issue remains unsettled and should be evaluated on a case-by-case basis.

The following screening criteria are identified based on the methodology developed by the South Coast AQMD Working Group for GHG emissions thresholds.

Screening Criteria

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, South Coast AQMD convened a GHG CEQA Significance Threshold Working Group. Based on the Working Group meetings, a tiered approach for evaluating GHG emissions for development projects was developed:

Tier 1 If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.

Tier 2 If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., City or County), project-level and cumulative GHG emissions are less than significant.

Tier 3 If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.

Tier 4 If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

For projects that are not exempt under Tier 1 or where no qualifying GHG reduction plans are directly applicable under Tier 2, the Working Group recommended a quantitative assessment of project-related GHG emissions using CalEEMod. The South Coast AQMD working group identified a screening-level threshold of 3,000 metric tons (MT) annually for all land use types based on the market capture approach identified in CAPCOA's "CEQA and Climate Change" (2008). This bright-line threshold is based on a review of the Governor's Office of Planning and Research database of CEQA projects in the South Coast

Air Basin. Based on review of 711 projects, 90 percent of CEQA projects would exceed the bright-line screening threshold of 3,000 MT/year. Projects that do not exceed the bright-line threshold would have a nominal and therefore less than cumulatively considerable impact on GHG emissions under Tier 3 and would not warrant a more detailed review of the project's GHG emissions with the State's long-term climate goals or strategies. The Working Group's methodology, documented in the meeting minutes and staff proposals detailing how the Tier 3 bright-line screening threshold was developed, can be found at South Coast AQMD's website under "GHG Significance Thresholds."[3]

GHG Emission Sectors

Sectors to consider for inclusion in a development project's GHG emissions inventory include:

- **Construction Emissions.** Construction emissions include equipment and vehicle exhaust, fugitive dust, and off-gas emissions from construction activities. Construction emissions are typically short-term emissions but can represent a substantial one-time amount of GHG emissions. Therefore, typical practice has been to amortize these one-time emissions over a 30-year time frame and combine them with the GHG inventory.

- **Water and Wastewater.** GHG emissions from this sector are indirect emissions from the treatment, conveyance, and distribution of water and wastewater. These emissions should be included in a GHG emissions inventory for a development project if the project is likely to increase water or wastewater demand.

- **Waste Disposal.** GHG emissions from this sector are indirect emissions from waste disposal. These emissions should be included in a GHG emissions inventory for a development project if the project is likely to increase waste disposal onsite during project operations.

- **Energy.** Indirect emissions from purchased energy and direct emissions from natural gas use are included in the energy sector. Use of natural gas includes gas used for heating, cooking, and fireplaces. Emissions from purchased energy and natural gas should be included in most GHG emissions inventories.

- **Area Sources.** Area sources include architectural coatings, aerosols, and landscaping fuel used onsite. These sources may represent a small fraction of the total GHG emissions inventory but should be included when they generate more than a nominal amount of GHG emissions.

- **Transportation.** Transportation-related GHG emissions are from mobile sources of emissions generated by the project (e.g., vehicles). Emissions from transportation typically represent the largest component of a GHG emissions inventory and should be included if a project generates new trips.

- **Carbon Sequestration.** This sector includes one-time emissions from vegetation planted or removed as a result of the project (sequestered carbon). This sector is a GHG reduction that is currently considered optional in a GHG emissions inventory but may assist in reducing the net increase in GHG emissions generated by the project. If included, the net increase in vegetation (e.g., existing vegetation removed and new vegetation replaced) weighed against the removal of vegetation should be considered.

[3] http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds/page/2

GREENHOUSE GAS EMISSIONS

Consistency with GHG Reduction Plans

Consistency with state, regional, and local GHG reduction plans should be considered in a project's evaluation of GHG emissions. Applicable plans may include CARB's Scoping Plan and SCAG's RTP/SCS.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, regional, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and would preclude the need for additional analysis. This must be substantiated in the environmental analysis.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs are not able to sufficiently reduce the significance, these impacts are potentially significant. In some cases, an impact may not be significant if it is consistent with the general plan, the City's vision for the area, or other existing plans or guidelines for the project site. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

For GHG emissions, mitigation measures are usually based on the technical analysis. Appendix D lists sample mitigation measures for GHG emissions.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.9 HAZARDS AND HAZARDOUS MATERIALS

3.9.1 Background

Hazardous Materials Sites in Irvine

Hazardous material sites can include any business or operation that has previously used or currently uses hazardous materials on a routine basis. It can also include any site where hazardous materials have been historically used or spilled. The State Water Resources Control Board has a general database that indicates where hazardous materials are known to exist. This site, Geotracker, can be accessed online at http://geotracker.swrcb.ca.gov/. In addition, the California Department of Toxic Substances Control has a database, EnviroStor, that tracks cleanup, permitting, enforcement, and investigation efforts of hazardous waste facilities and sites with known or suspected contamination issues (DTSC 2019).

Environmental Records Review

An environmental records review is a more complete database of properties that may contain hazardous materials. Usually, GeoSearch is used to complete an environmental records review. This database is a collection of regulatory agency databases that have information on properties that contain hazardous materials or have contained them in the past. The use of GeoSearch requires a fee and is generally used when a Phase I environmental site assessment is required for a proposed project. A search of this database includes a search of the following regulatory agency databases:

- National Priorities List (NPL)
- Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS)
- CERCLIS No Further Response Actions Planned (CERCLIS-NFRAP)
- Resource Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) Treatment Storage and Disposal (TSD) facilities
- RCRA non-CORRACTS TSD facilities
- RCRA generators
- State Hazardous Waste Sites
- Registered Underground Storage Tanks
- State Landfills and Solid Waste Disposal Sites
- State Leaking Underground Storage Tanks

Superfund Sites

The only Superfund site in the City of Irvine is the former El Toro Marine Corps Air Station. A final record of decision has been filed for this site with the Environmental Protection Agency (EPA) and is

available on the EPA website. The site served as a major West Coast jet fighter facility, and 25 potentially contaminated areas were identified, including 4 landfills and other areas where polychlorinated biphenyls (PCBs) and other contaminants are suspected of being spilled or dumped. Contamination was detected in soils and groundwater. This site is being addressed in several long-term remedial phases focusing on cleanup of the groundwater, identification of the sources and cleanup of VOC contamination in soils, and cleanup of abandoned wastewater treatment lines and tanks (EPA 2019).

Accidental Release Program

The California Accidental Release Program (CalARP) requires companies that use or store more than the regulated threshold quantities of chemicals to file a risk management plan (RMP) that calculates the off-site consequences of hazardous material releases. It is administered by the Orange County Fire Authority (OCFA), which monitors and regulates identified industries in Irvine that have a stationary source of hazardous materials and maintains a list of RMPs. The potential hazardous threat of CalARP facilities is determined by completing a land use compatibility analysis. The regulatory responsibilities for CalARP, including the development and implementation of an RMP, are found in Title 19, Division 2, Chapter 4.5 of the California Code of Regulations.

Hazardous Air Emissions and the FIND Database

The South Coast Air Quality Management District (South Coast AQMD) maintains a web tool to search for public information about facilities regulated by South Coast AQMD that have permits to operate equipment that releases pollutants into the air. The system is called the Facility Information Detail (FIND). The FIND database provides nonconfidential facility information—facility name, address, facility status (active, out-of-business, etc.), standard industrial classification code, application and permit number, permit and application status, application and permit issue dates, equipment type and description, history of notices of violation and recent notices to comply (from January 2003 to present), reported criteria and toxic emissions by year, and pollutant type for the years that data are currently available in the database.[1]

Fire Hazard Severity Zones

Fire hazard severity zones are divided between state responsibility areas (SRA) and local responsibility areas (LRA). Figure 3.20-1 in Section 3.20, *Wildfire*, shows the locations of LRAs in and around Irvine. SRAs have fire hazard severity zones: moderate, high, and very high. Very high fire hazard severity zones are mapped for LRAs. The building code requirements for fire prevention are more stringent in very high fire hazard severity zones.

Airport Land Use Plan: John Wayne Airport

The Airport Environs Land Use Plan (AELUP) for John Wayne Airport, described in Section 2.10, *Land Use*, and in Appendix F, *Regulatory Information,* contains land use restrictions that are meant to reduce the hazards associated with airports.

[1] The FIND database is available at http://www.aqmd.gov/webappl/fim/default.htm.

3.9.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for hazards and hazardous materials. A project would normally have a significant effect on the environment if the project would:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would create a significant hazard to the public or the environment.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

3.9.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The hazards and hazardous materials environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to hazards and hazardous materials impacts are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

Step 1 of the "General Approach for Determining Significance" flow chart provides guidelines for obtaining the general information needed to establish the base environmental condition. The following questions focus the assessment on the information needed for hazards and hazardous materials.

- If the site is currently occupied, what types of land uses are onsite? If they are residential, it is unlikely there are hazardous materials onsite. If they are nonresidential, is there potential that hazardous materials may be onsite?

- Has a hazardous materials site discussion been included in EIRs prepared for the planning area in which the proposed project is located?

- Is the site listed on a database of hazardous materials sites obtained from standard environmental record sources identified in the ASTM International's current "Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process" (Geotracker, FIND, etc.)?

- Is the site impacted by an offsite source of hazardous materials listed on a database obtained from standard environmental record sources, and located within the specified search distances identified in the ASTM International's current "Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process"? (E.g., is the site within 1,000 feet of a major source of toxic air contaminants?) If adjacent to another city/county jurisdiction, has a comparable database been reviewed for that city/county?

- Is the site in the portion of the IBC that is within the AELUP restricted area?

- Is the site within a wildland fire area, identified as a high or very high fire hazard severity zone on the SRA or LRA maps or in the City's General Plan?

Step 2: Project Impacts

Once the project description is complete, the impacts of the proposed project on the existing environment can be determined. The following issues and questions should be taken into account when determining whether the project would have potential impacts.

- Would the proposed project include industrial land uses?

- Would the project place people (e.g., residents or workers) near or on sites that may be found on an agency's database of sites with hazardous materials, such as those listed under "Environmental Review Record," CalARP, or the FIND database? If adjacent to another city/county jurisdiction, has a comparable data base been reviewed for that city/county?

- Does the project require the destruction of existing buildings? If so, asbestos and lead-based paint may be present. The environmental analysis must describe the process for handling these materials.

- Would the proposed land uses be subject to regulatory review by CalARP? Do proposed businesses require an RMP?

- If the project is within the influence area of the John Wayne Airport AELUP, does it meet the building design and land use restrictions? Figure 3.9-1, *John Wayne Airport Height Restrictions*, and 3.9-2, *John Wayne Airport Safety Zone*s, show the airport height restrictions and airport safety zones, respectively.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine has a number of PPPs that apply to hazards and hazardous materials (see Appendix C). Federal, state, and local agencies regulate activities during both the construction and operation of businesses that may be on a contaminated site or that may emit or use hazardous materials. There are also regulations that must be followed in cases of accidental release or exposure to hazardous materials. In

most cases, hazards and hazardous materials impacts can be reduced to less than significant levels when the City's PPPs are applied and followed.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs are not able to sufficiently reduce the significance, these impacts are potentially significant. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures are meant to relate directly to the project impact and must be feasible to enforce and implement by the project applicant, lead agency, or another responsible agency.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would reduce but not avoid impacts, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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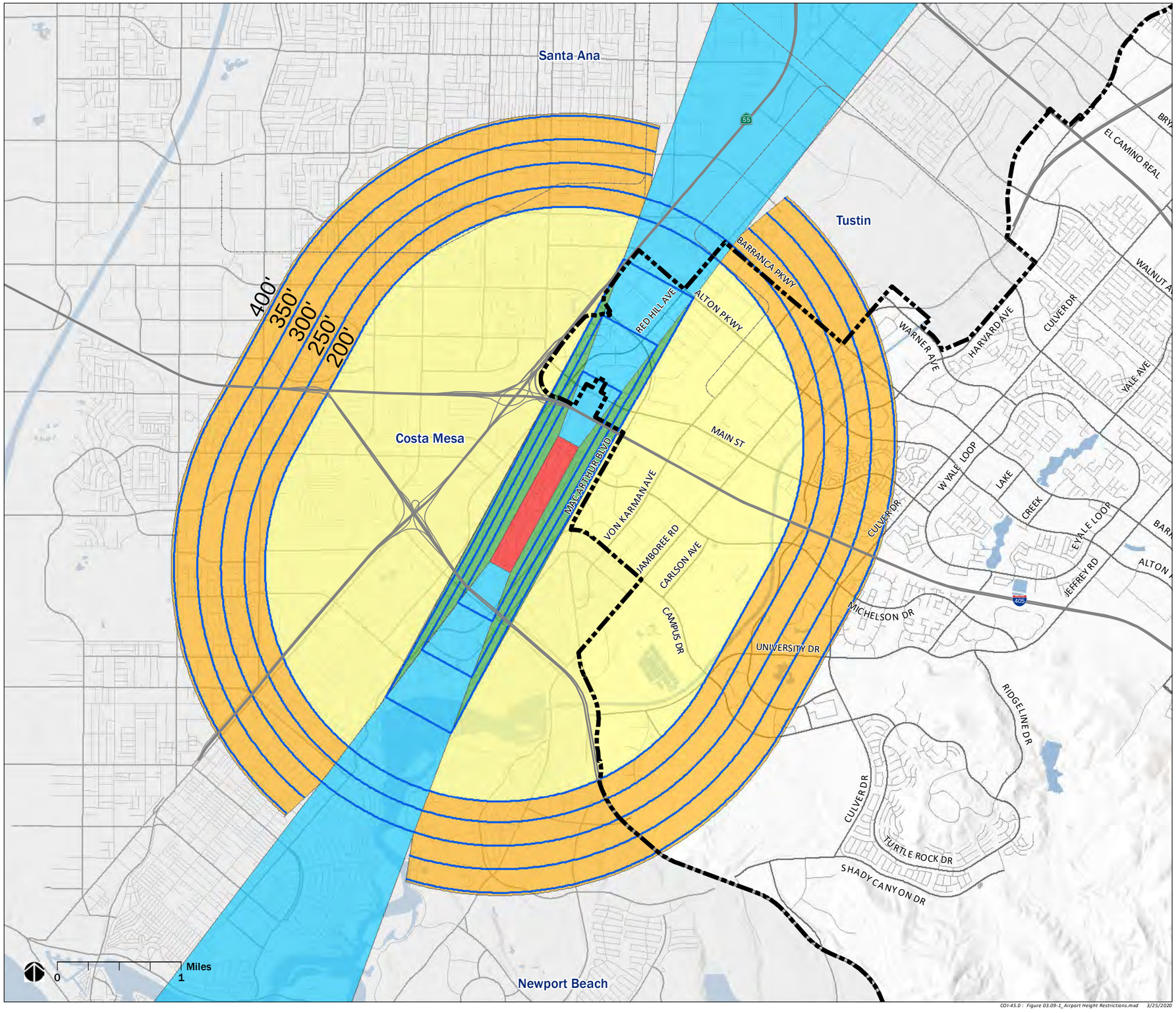
Figure 3.9-1

JOHN WAYNE AIRPORT HEIGHT RESTRICTIONS



LEGEND

Elevation Contours
- Maximum height limit in feet above mean sea level (AMSL)

Airport Surfaces
- Horizontal Surface - Elevation 206 Feet AMSL
- Departure Surface - Slope 50:1 (Horizontal:Vertical)
- Transitional Surface - Slope 7:1 (Horizontal:Vertical)
- Conical Surface - Slope 20:1 (Horizontal:Vertical)
- Runway - Elevation 54 Feet AMSL

- City Boundary

Recreated from Orange County Airport Land Use Commission, Airport Environs Land Use Plan for John Wayne Airport, 2008.

COI-45.0 : Figure 03.09-1_Airport Height Restrictions.mxd 3/25/2020

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Figure 3.9-2

JOHN WAYNE AIRPORT SAFETY ZONES

LEGEND

1. RUNWAY PROTECTION ZONE
2. INNER APPROACH / DEPARTURE ZONE
3. INNER TURNING ZONE
4. OUTER APPROACH / DEPARTURE ZONE
5. SIDELINE ZONE
6. TRAFFIC PATTERN ZONE

1-6 SAFETY COMPATIBILITY ZONES FOR RUNWAY 1L &19R (A MEDIUM GENERAL AVIATION RUNWAY AS DESCRIBED IN THE CALIFORNIA AIRPORT LAND USE PLANNING HANDBOOK, JANUARY 2002 EDITION)

1-6 SAFETY COMPATIBILITY ZONES FOR RUNWAY 1R &19L (A SHORT GENERAL AVIATION RUNWAY AS DESCRIBED IN THE CALIFORNIA AIRPORT LAND USE PLANNING HANDBOOK, JANUARY 2002 EDITION)

Irvine City Boundary

Recreated from Orange County Airport Land Use Commission, Airport Environs Land Use Plan for John Wayne Airport, 2008.

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3.10 HYDROLOGY AND WATER QUALITY

The hydrology and water quality CEQA analysis covers a wide range of topics related to flooding, hydrological flows, groundwater recharge, and water quality. A project would cause potentially significant hydrology or water quality impacts if it violates state or federal water quality standards; alters the hydrological characteristics of the site (drainage patterns and/or groundwater recharge); allows for a substantial increase in runoff; involves development within a flood hazard, seiche, or tsunami zone; or conflicts with or obstructs implementation of a water quality control plan or sustainable groundwater management plan.

3.10.1 Background

Drainage and Runoff

If the proposed development would adversely change the onsite hydrology, affecting drainage patterns both on- and offsite, either project design features or mitigation measures should be incorporated that reduce the effects of the proposed development. In the Santa Ana Regional Water Quality Control Board (RWQCB) region, new development and significant redevelopment must demonstrate compliance with the Orange County Municipal Stormwater Permit, Santa Ana Region, Order No. R8-2009-0030, as amended by Order No. R8-2010-0062. The Santa Ana Regional permit is being revised by Santa Ana RWQCB. The requirements of this permit for new development and significant redevelopment are outlined in Appendix F, *Regulatory Information.*

Construction Site Runoff

Stormwater runoff is caused by natural precipitation, and urban runoff is water from human use, such as irrigation systems. Construction sites typically generate stormwater runoff because irrigation systems are usually not yet in place. Stormwater runoff from construction sites contains pollutants and sediment that are carried offsite into stormwater drains, catch basins, and ultimately, to rivers and the Pacific Ocean. Construction site sediments and pollution can cause chemical, biological, and physical harm to local waterways. These pollutants of concern should be addressed by complying with the Construction General Permit (CGP). The CGP requires the development and implementation of a site-specific Stormwater Pollution Prevention Plan (SWPPP), which includes best management practices to help reduce the negative effects of construction-related stormwater pollution. The presumed construction conditions and preventative actions should be discussed in an environmental document in order to determine the development project's construction impacts. Further details for the CGP are outlined in Appendix F, *Regulatory Information*.

Post-construction Site Runoff

Post-construction runoff can come from landscaping irrigation (urban runoff) and natural precipitation (stormwater runoff). Under the Orange County permit (Order No. R8-2009-0030, amended by Order No. R8-2010-0062), new development and redevelopment must match the pre-project water balance (i.e., the amount of water that becomes runoff) for the smallest storms up to the 85th percentile storm event (or the smallest storm event that generates runoff, whichever is larger). Development projects that fail to demonstrate how water will be retained onsite to meet these requirements may have potentially significant impacts on hydrology.

HYDROLOGY AND WATER QUALITY

Regulatory Requirements for Water Quality

Descriptions of potentially applicable water quality permits, such as the CGP and municipal separate storm sewer system (MS4) permit, are in Appendix F.

Clean Water Act and Water Quality Regulation

Section 303(d) of the federal Clean Water Act (CWA) requires states to identify and establish a list of water bodies for which technology-based effluent limitations required by section 301 of the CWA are not stringent enough to attain and maintain water quality standards. The list must be submitted by the State Water Resources Control Board (SWRCB) to the US Environmental Protection Agency every two years for review and approval. The water bodies on the 303(d) list are termed "impaired water bodies."

For each water-quality-limited segment of water bodies identified in the 303(d) list, the SWRCB must develop a "total maximum daily load" (TMDL)—the maximum amount of a pollutant that a water body can receive per day and still attain water quality standards—or take other action to address the impairment. The pollution comprising that maximum has to be budgeted by allocating it among the various sources of the pollutant in order to regain the beneficial uses of the water body.

The following water bodies are listed as impaired, as shown in Table 3.10-1.

Table 3.10-1
Impaired Water Bodies in Irvine

Water Body	*Pollutant*
Borrego Creek (from Irvine Boulevard to San Diego Creek Reach 2)	ammonia (unionized); indicator bacteria
Peters Canyon Channel	DDT; toxaphene; pH; indicator bacteria; benthic community effects; malathion; selenium; toxicity
San Diego Creek Reach 1	fecal coliform; nutrients; sedimentation/siltation; selenium; toxaphene; benthic community effects; DDT; MALATHION; toxicity
San Diego Creek Reach 2	indicator bacteria; benthic community effects
Serrano Creek	ammonia (unionized); pH; indicator bacteria; benthic community effects
Upper Newport Bay (Ecological Reserve)	Nutrients, pathogens, pesticides, sedimentation/siltation
Lower Newport Bay	Nutrients, pathogens, pesticides

Notes: DDT: Dichlorodiphenyltrichloroethane;
Source: SWRCB. 2010. 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report); SWRCB. April 2017. Proposed Updates to the 303 (d) List. https://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/303d-R8-2017-0013.html.

The following TMDLs apply to water bodies in the City of Irvine:

- Toxic pollutants: San Diego Creek and Newport Bay
- Nutrients: Newport Bay/San Diego Creek Watershed
- Sediment: Newport Bay/San Diego Creek Watershed
- Diazinon and chlorpyrifos:[1] San Diego Creek and Upper Newport Bay
- Organochlorine compounds: San Diego Creek and Newport Bay

Additional information can be found on the SARWQCB website:
http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml.

Santa Ana Regional Water Quality Control Board

The entire City of Irvine is within the Newport Bay watershed and the jurisdictional area of the Santa Ana RWQCB. The RWQCB is responsible for the Basin Plan, which provides all relevant information necessary to carry out federal mandates for the antidegradation policy, 303(d) listing of impaired waters, and related TMDLs and information relative to National Pollution Discharge Elimination System (NPDES) and Waste Discharge Requirements permit limits.

The Orange County Drainage Area Management Plan includes the Santa Ana RWQCB guidelines for CEQA review, which the City is including in this manual to help indicate when impacts may occur.

Santa Ana RWQCB CEQA Review Guidelines

Pursuant to the Santa Ana Region (North Orange County) NPDES Permit, the 2003 Orange County Drainage Area Management Plan for New Development and Significant Redevelopment lists the following potential impacts to be considered during CEQA review:

- Potential impact of project construction on stormwater runoff.
- Potential impact of project's post-construction activity on stormwater runoff.
- Potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks, or other outdoor work areas.
- Potential for discharge of stormwater to affect the beneficial uses of the receiving waters.
- Potential for significant changes in the flow velocity or volume of stormwater runoff to cause environmental harm.
- Potential for significant increases in erosion of the project site or surrounding areas.
- Potential decreases in quality and quantity of recharge to groundwater.
- Potential impact of pollutants in stormwater runoff from the project site on any 303(d) listed "impaired" water bodies.

[1] Diazinon and Chlorpyrifos are organophosphate insecticides.

HYDROLOGY AND WATER QUALITY

These urban runoff and stormwater pollution issues will be considered in the initial study process (project application forms and checklists) and in the preparation and reviews of environmental documentation (negative declarations, mitigated negative declarations, or EIRs) (OCPW 2011).

Industrial General Permit

The Industrial General Permit (IGP) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The IGP requires the implementation of management measures that will achieve the performance standard of best available technology that is economically achievable and best conventional pollutant control technology. The IGP also requires the development of a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are identified and the means to manage the sources to reduce stormwater pollution are described.

Other Hydrology Issues Addressed in CEQA

The hydrology of a geographical area includes the drainage patterns, flow rates, and circulation and distribution of surface and groundwater. Areas that are prone to flooding are floodplains or flood hazard areas, which are outlined and categorized by the Federal Emergency Management Agency (FEMA) and described under Section 3.10.5, *Determining Significance*. Seiches and tsunamis are hazardous conditions related to the movement of substantial amounts of water. They tend to occur as a result of a natural disaster or during heavy storms. Seiches are large, earthquake-generated waves in rivers, lakes, reservoirs, ponds, and any other large onshore body of water. Unlike tsunamis, they do not occur in the ocean. Tsunamis only occur in the ocean and are large, earthquake-generated waves that start offshore and travel to the coast. Refer to Figures 3.10-1, *Flood Hazards*, and 3.10-2, *Dam Inundation*, for flood hazard areas and dam inundation areas, respectively.

FEMA Flood Hazard Zones

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk (see Table 3.10-2). These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. FIRMs can be created on FEMA's "Map Service Center" website (http://msc.fema.gov/).

Table 3.10-2
FEMA Flood Hazard Zones

Zone	*Description*
Moderate to Low Risk Areas	
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
High Risk Areas	
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1–A30 Zones.
A1–A30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a base flood elevation (BFE).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
High Risk – Coastal Areas	
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1-30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Undetermined Risk Areas	
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

3.10.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for hydrology and water quality impacts. A project would normally have a significant effect on the environment if the project would:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

    i. result in a substantial erosion or siltation on- or offsite;

    ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

    iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

    iv. impede or redirect flood flows.

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

In addition, the Orange County Municipal Stormwater Permit requires the City consider whether a project would:

- Impact stormwater runoff either during project construction or post-construction?

- Potentially discharge stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas?

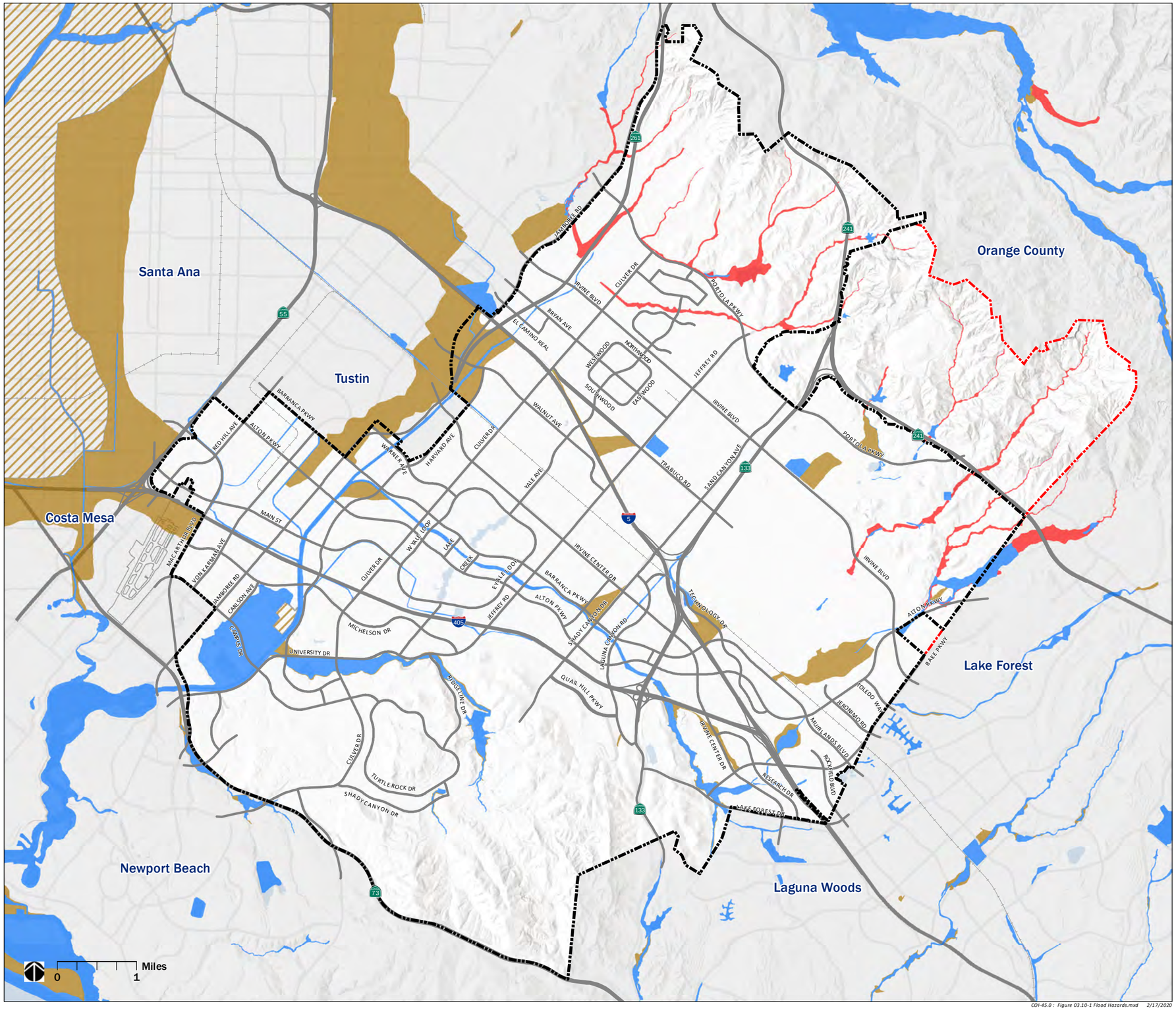
- Potentially discharge stormwater and affect the beneficial uses of the receiving waters?

- Potentially significantly change the flow velocity or volume of stormwater runoff and cause environmental harm?

- Potentially significantly increase erosion on the project site or surrounding areas?

Figure 3.10-1

FLOOD HAZARDS



COI-45.0 : Figure 03.10-1 Flood Hazards.mxd 2/17/2020

LEGEND

- 100-Year Flood Zone
- 500-Year Flood Zone
- X, AREA WITH REDUCED FLOOD RISK DUE TO LEVEE
- DWR Awareness Floodplain
- City Boundary
- Sphere of Influence

Notes:
100-year floodplain: Includes areas subject to a 100-year flood (and denoted as a special flood hazard areas) as defined by the Federal Emergency Management Agency and where the National Flood Insurance Program floodplain management regulations must be enforced and where the mandatory purchase of flood insurance applies.

500-year floodplain: Includes areas between the limits of the 100-year floodplain and subject to a 500-year flood as defined by the Federal Flood Insurance Regulations and the Federal Emergency Management Agency. This area is also referred to as a moderate flood hazard area according to FEMA and flood insurance regulations may apply.

DWR Awareness floodplain: includes areas defined by the Department of Water Resources as having a potential for a 100-year flood that may warrant further studies to assess the risk of flooding. This map is not a regulatory map.

Data from California Department of Water Resources;
Federal Emergency Management Agency,
FEMA Flood Map Service Center, 2016.

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Figure 3.10-2

DAM INUNDATION

LEGEND

- Peters Canyon Reservoir
- Rattlesnake Canyon Reservoir
- Sand Canyon Reservoir
- Santiago Dam
- San Joaquin Reservoir
- Syphon Canyon Reservoir
- Prado Dam
- Villa Park Dam
- City Boundary
- Sphere of Influence

Notes:
Official Prado Dam Inundation Maps are currently being updated to reflect improvements constructed by the Army Corps of Engineers.

Data from California Department of Water Resources, California Dam Breach Inundation Maps, 2015.

Miles
0 1

COI-45.0 : Figure 03.10-2 Dam Inundation.mxd 2/17/2020

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- Potentially decrease the quality and quantity of recharge to groundwater?

- Potentially impact pollutants in stormwater runoff from the project site on any 303(d) listed water bodies?

3.10.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines. The general approach for environmental analysis is provided, followed by a more detailed narrative for each of the checklist thresholds discussed in this section.

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for hydrology and water quality should use the questions in Section 1.2 as a base. Additional questions that pertain specifically to hydrology and water quality are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

The existing conditions section of hydrology and water quality analysis should describe the existing drainage patterns of the project site, any onsite or nearby waterways, and a discussion of any recent hydrology studies that have been prepared for the project site as part of a program EIR, if applicable.

- Is the project site developed or vacant? If it is vacant, is it in a natural state? Does water flow offsite, or is it absorbed into the ground? If it is developed, where does onsite runoff flow?

- Does onsite runoff flow into a waterway that is listed as a 303(d) impaired water body by the Santa Ana RWQCB?

Step 2: Project Impacts

Once a project description has been established for a proposed project, the potential for hydrology and water quality impacts can be determined. The potential for impacts is based on the following questions, provided to supplement the questions under Step 2 of the "General Approach for Determining Significance Flow Chart" in Chapter 1.

- Consider the "SARWQCB CEQA Review Guidelines" listed above. Would the project create conditions that may trigger a potentially significant impact under these guidelines?

- Consult the hydrology and water quality regulatory information in Appendix F. Does the proposed project meet the requirements for demonstrating compliance under the general construction permit or the MS4 permit?

- Would construction of the proposed project cause siltation and erosion?

- Would the project increase the amount of impermeable surface on the project site, increasing the amount of runoff when compared to existing conditions?

- Would the project be built in an area that is identified as a FEMA "High Risk Area" (see Table 3.10-2 and consult FEMA's "Map Service Center" website).

Step 3: Apply Plans, Policies, and Programs

Appendix C summarizes the PPPs for the City of Irvine. There are a number of standard conditions, municipal and zoning code requirements, and state or federal regulations that projects must follow in the City of Irvine. The City of Irvine will implement standard conditions that require projects to comply with flood hazard, water quality, and drainage requirements. These are meant to reduce or avoid project-related hydrology and water quality impacts.

Step 4: Determine Impact Significance

A hydrology or water quality study can help determine the level of significance for water quality and hydrology impacts. If the application of PPPs does not reduce potentially significant biological resource impacts, the remaining impacts are potentially significant.

Step 5: Formulate Mitigation

The implementation of a water quality management plan or a SWPPP typically reduces project impacts. When additional project impacts remain, mitigation measures for hydrology and water quality may require additional best management practices. Additional mitigation measures, if necessary, should follow the requirements laid out in the "General Approach for Environmental Analysis" flow chart in Chapter 1.

Step 6: Determine Significance After Mitigation

As described in the flow chart in Chapter 1, a determination should be made of project impacts after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented. Any remaining significant and unavoidable impacts shall be identified. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.11 LAND USE AND PLANNING

3.11.1 Background

The City is divided into a series of master-planned communities or neighborhoods called planning areas (see Figure 2-1, *City of Irvine Planning Areas*), with each planning area having its own character and development goals.

Residential growth has been concentrated for the most part within the northern and central flatlands of the City, with some residential in the northern and southern hillside areas. More recent residential growth has been concentrated within or near the job centers of the Irvine Business Complex and Irvine Spectrum areas. Employment growth (e.g., commercial, retail, office, industrial) has been concentrated adjacent to regional transportation facilities (e.g., John Wayne Airport, I-5 and I-405, Irvine Station) on the western and eastern edges of the City (i.e., Planning Area 35: Irvine Spectrum, Planning Area 36: Irvine Business Complex).

Relevant Planning Programs

Land use issues can be divided into two general categories: land use compatibility and land use consistency. Land use compatibility addresses the placement of new sensitive land uses (e.g., residential, parks, schools, nursing homes, childcare, and hospitals) near sources of air pollutants, odors, and noise, and the placement of new industrial/commercial land uses near sensitive land uses. Land use consistency addresses the consistency or compliance of a proposed project with adopted goals and policies, such as:

- City of Irvine General Plan
- City of Irvine Zoning Ordinance
- Airport Environs Land Use Plan (AELUP) for John Wayne Airport
- University of California, Irvine (UCI), Long Range Development Plan
- Local Coastal Program
- Orange County Central and Coastal Natural Community Conservation Plan/Habitat Conservation Plan
- Southern California Association of Governments (SCAG) Plans and Policies: Regional Comprehensive Plan (RCP), Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS).

3.11.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for land use and planning impacts. A project would normally have a significant effect on the environment if the project would:

a. Physically divide an established community.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.11.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for land use and planning should look at the questions in Section 1.2. Additional questions that pertain specifically to land use and planning impacts are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

The following inquiries are designed to obtain an accurate assessment of the existing conditions for land use analysis:

- What are the existing land uses on the project site?
- What land uses are adjacent to the site?
- What are the general plan and zoning designations for the site?
- Do other relevant planning programs (e.g., those listed above) apply to the site?

Step 2: Project Impacts

The following inquires be used to help determine the proposed project's potential to cause land use compatibility impacts in the City of Irvine.

- Is the proposed project consistent with the General Plan and zoning designations for the project site?

- Would the proposed project cause incompatibilities related to noise, odor, safety hazards, or visual impacts? Be sure to consider differences in the physical scale of development, noise levels, and hours of operation.

- How does the proposed development fit with the existing uses and character of the surrounding developed and/or natural environment?

Consistency Analyses

Descriptions of consistency analysis with policy plans are provided below. Samples of consistency analysis with the General Plan, SCAG's RCP, and the RTP/SCS are provided in Tables 3.11-1 through 3.11-3. Consistency with the SCAG plans are only required when the project meets SCAG requirements for intergovernmental review (see Intergovernmental Review Procedures Handbook [November 1995], § 15206 of the State CEQA Guidelines, and online at http://www.scag. ca.gov/igr/clist.htm). Please note that SCAG's policies in the RCP are advisory only.

Coastal Zone Consistency Analysis

Consistency analysis should be undertaken if a proposed project is within the 40-acre parcel in the Irvine Business Complex (Planning Area 36) that lies within the coastal zone. The analysis should refer to the development regulations outlined in Chapter 2-7 of the Zoning Ordinance (Coastal Zone: Special Regulations for Development Located in Coastal Zone) to determine consistency with development in the coastal zone.

John Wayne Airport AELUP Consistency Analysis

Consistency analysis with the AELUP should be undertaken when a proposed project would occur within the designated areas of the AELUP for John Wayne Airport. The analyst should refer to the development regulations outlined in the AELUP, General Plan, and Irvine Business Complex (IBC) Vision Plan.[1]

UCI Long Range Development Plan Consistency Analysis

UCI's growth and development is guided by its Long Range Development Plan (LRDP), which is a physical development and land use plan to meet the needs of the campus. UCI owns and operates a property along the east side of Jamboree Road between Campus Drive and Fairchild Road in Planning Area 29. According to the UCI 2007 LRDP, the site, known as North Campus—which is currently occupied by academic and support facilities, an arboretum, and a child development center—is planned to be redeveloped with up to 950,000 square feet of commercial mixed use, including office/research and development space, commercial and retail space, and clinical uses as well as 435 multifamily dwelling units by the year 2036 (UCI 2007). The LRDP includes land use, circulation, and other development-related goals.

City of Irvine General Plan and Zoning Ordinance Consistency Analysis

The proposed project's consistency with the General Plan and Zoning Ordinance should follow a table format, with a side-by-side comparison of the General Plan policies that are applicable to the proposed project and a discussion of the consistency or nonconsistency of the policy and supportive analysis (see Table 3.11-1). The analyst should refer to the applicable development regulations outlined in the applicable chapters of the Zoning Ordinance to determine consistency with the Zoning Ordinance. Table 3.11-1 is provided as a template, and analysts should review the Zoning Ordinance and General Plan for goals and policies applicable to their project.

[1] The IBC Vision Plan outlines the City's policies and objectives for addressing residential and mixed-use development within the IBC, and it is an element of the City's General Plan (IBC Element).

Table 3.11-1
General Plan Consistency Analysis

Applicable City of Irvine General Plan Policies	*Project Consistency*
Land Use Element	
Objective ##: Insert Objective Language from General Plan	
Policy ##: Insert policy language from General Plan	***Consistent or Inconsistent:*** Insert consistency or inconsistency analysis.
Circulation Element	
Objective ##: Insert Objective Language from General Plan	
Policy ##: Insert policy language from General Plan.	***Consistent or Inconsistent:*** Insert consistency or inconsistency analysis.
Housing Element	
Objective ##: Insert Objective Language from General Plan	
Policy ##: Insert policy language from General Plan	***Consistent or Inconsistent:*** Insert consistency or inconsistency analysis.
Seismic Element	
Objective ##: Insert Objective language from General Plan.	
Policy ##: Insert policy language from General Plan.	***Consistent or Inconsistent:*** Insert consistency or inconsistency analysis.

Source: City of Irvine General Plan.

RTP/SCS and RCP Consistency Analysis

Table 3.11-2 and Table 3.11-3 provide side-by-side example tables for consistency analyses of the RTP/SCS and the RCP, respectively. The advisory goals and policies of the RCP that may be applicable to a proposed project are generally provided by SCAG during the public review period of the environmental document, but may also be viewed on SCAG's website. A consistency review with SCAG policies would only be required when the project is of statewide, regional, or areawide significance, pursuant to the CEQA Guidelines § 15206.

Table 3.11-2
Consistency with SCAG's Draft Regional Transportation Plan / Sustainable Communities Strategy

SCAG Strategy	*Project Consistency*
RTP/SCS Goals	
Insert RTP/SCS Goal, repeat rows until all goals are addressed.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
2016 RTP/SCS Guiding Policies	
Insert RTP/SCS Guiding Policy, repeat rows until all policies are addressed.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Land Use Policies	
Insert RTP/SCS Land Use Policies, repeat rows until all policies are addressed.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Benefits	
Insert RTP/SCS Benefits, repeat rows until all benefits are addressed.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.

Source: Southern California Association of Governments. Regional Transportation Plan / Sustainable Communities Strategy.

Table 3.11-3
Consistency with SCAG's Regional Comprehensive Plan

SCAG Policy	*Project Consistency*
Land Use And Housing Action Plan	
Policy LU-4: Local governments should provide for new housing, consistent with State Housing Element law, to accommodate their share of forecast regional growth.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Open Space and Habitat – Community Open Space Action Plan	
Policy OSC-7: Local governments should prepare a Needs Assessment to determine the adequate community open space level for their areas.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Water Action Plan	
Policy WA-9: Developers and local governments should consider potential climate change hydrology and resultant impacts on available water supplies and reliability in the process of creating or modifying systems to manage water resources for both year-round use and ecosystem health.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Energy Action Plan	
Policy EN-8: Developers should incorporate and local governments should include the following land use principles that use resources efficiently, eliminate pollution and significantly reduce waste into their projects, zoning codes and other implementation mechanisms: • Mixed-use residential and commercial development that is connected with public transportation and utilizes existing infrastructure. • Land use and planning strategies to increase biking and walking trips.	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Air Quality Action Plan	
Policy AQ-5: Local governments should implement control measures from local Air Quality Management Plans (AQMPs) such as accelerating the turnover of older, more polluting mobile and stationary source equipment using AB 2766 funding per the State Implementation Plan (SIP).	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.
Solid Waste Action Plan	
Policy SW-9: Local governments should update general plans to reflect solid waste sustainability issues such as waste reduction goals and programs (1996 RCP; 135).	***Consistent or Not Applicable:*** If consistent, provide analysis. If not applicable, a general statement of non-applicability will suffice.

Source: 2008 SCAG Regional Comprehensive Plan.
Note: Please note that the policies outlined above are just a few of the policies in the RCP and do not constitute the entire list of policies. For a complete list of the most current RCP and related policies, refer to SCAG's website.

Step 3: Apply Plans, Policies, and Programs

The land use PPPs for Irvine include local and regional planning documents. Most of these are listed above under "Relevant Planning Programs" and in Appendix C of this manual.

Step 4: Determine Impact Significance

Impacts are potentially significant when they would exceed land use significance thresholds, and PPPs or project design features are not able to reduce the impact to less than significant levels.

For impacts related to the division of an existing community, project design features or modifications to the proposed project design may reduce impacts to less than significant levels.

For impacts related to consistency of the proposed project with existing plans, the level of significance depends on the plan being analyzed. Compliance with some plans is mandatory, such as the John Wayne Airport AELUP and the Zoning Ordinance. Other plans, such as SCAG's RCP or RTP/SCS, do not require consistency, but the project should not be inconsistent when it can be avoided.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures must be feasible to be enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would reduce but not avoid impacts, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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3.12 MINERAL RESOURCES

For the purpose of CEQA analysis, mineral resources refer to aggregate resources that consist of sand, gravel, and crushed rock. Aggregate resources provide bulk and strength in construction materials such as portland cement and asphaltic concrete. Other nonfuel mineral resources include metals such as gold, silver, iron, and copper; industrial metals such as boron compounds; rare-earth elements; and clays, limestone, gypsum, salt, and dimension stone.

3.12.1 Background

The California Geological Survey (CGS) classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act (SMARA) of 1975 and assists CGS in the designation of lands containing significant aggregate resources. The State Geologist is responsible for classifying areas within California that are subject to urban expansion or other irreversible land uses. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance.

Classification into Mineral Resource Zones (MRZ) is completed by the State Geologist in accordance with the SMGB's priority list and according to the presence or absence of significant mineral resources. The MRZ categories are:

- **MRZ-1:** Adequate information indicates that no significant mineral deposits are present or likely to be present, or where it is judged that little likelihood exists for their presence.

- **MRZ-2:** Adequate information indicates that significant mineral deposits are present, or likely to be present, and development should be controlled.

- **MRZ-3:** The significance of mineral deposits cannot be determined from the available data.

- **MRZ-4:** There is insufficient data to assign any other MRZ designation.

Of the four categories, lands classified as MRZ-2 are of the greatest importance. Such areas are underlain by demonstrated mineral resources or are located where geologic data indicate significant measured or indicated resources. MRZ-2 areas are designated by SMGB as "regionally significant." Such designations require that a lead agency's land use decisions involving designated areas be made in accordance with its mineral resource management policies (if any exist) and that it consider the importance of the mineral resource to the region or the state as a whole, not just to the lead agency's jurisdiction.

The MRZ classification areas within the City of Irvine are shown in the CGS mineral resources map of Orange County, "Generalized Mineral Land Classification of Orange County, California: Aggregate Resources Only." The portion of the map that encompasses the City of Irvine and general vicinity is reproduced as Figure 3.12-1, *Mineral, Oil, and Gas Resources*. As shown in this figure, the City of Irvine is made up of MRZ-1 and MRZ-3. No areas are designated MRZ-2.

3.12.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for mineral resource impacts. A project would normally have a significant effect on the environment if the project would:

a. Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state.

b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.12.3 Determining Significance

The method for determining mineral resource impacts is based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to mineral resources are provided in this section for each step of the flow chart.

General Approach

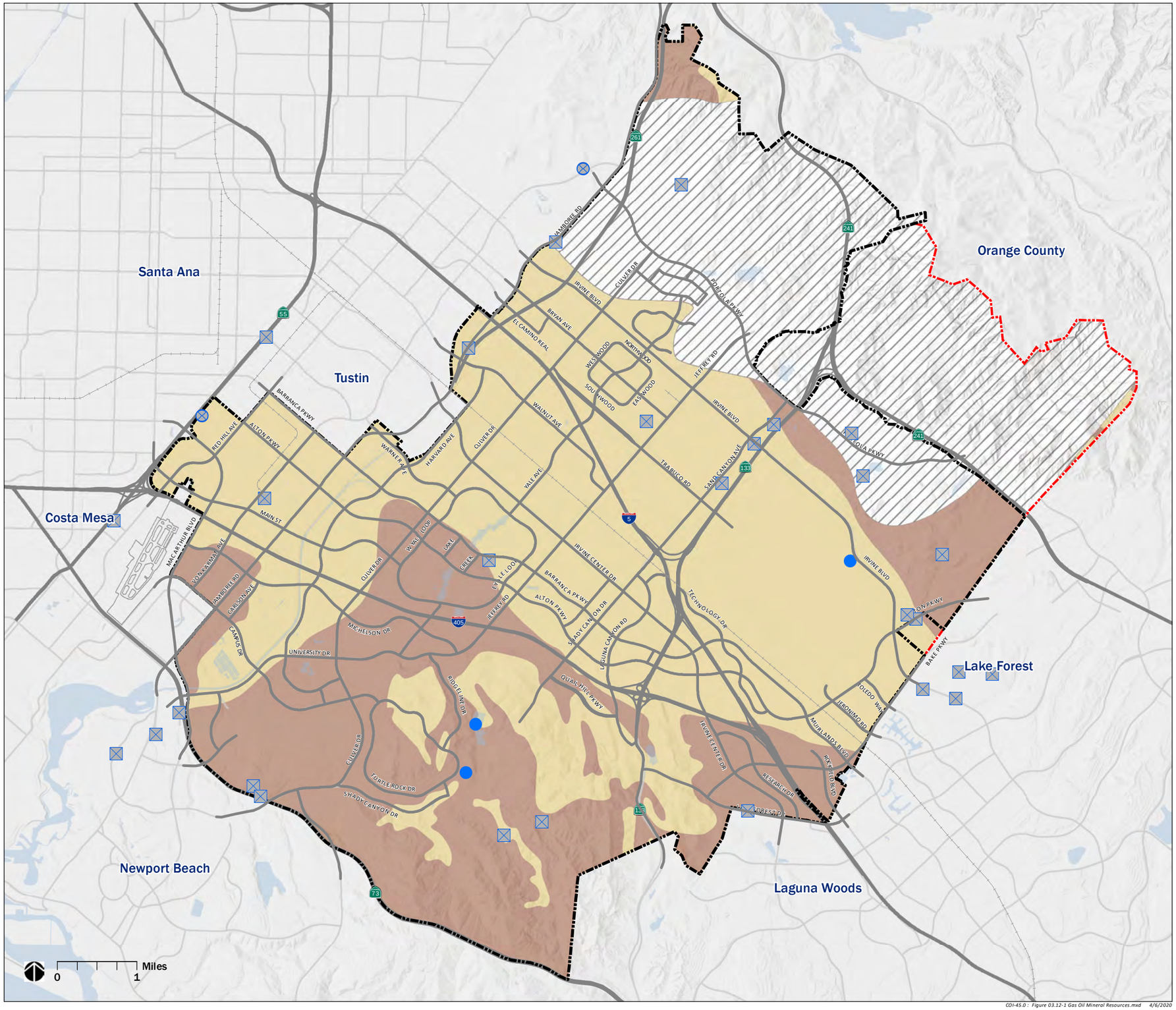
The general steps for determining significance should follow the same steps described in the flow chart in Chapter 1. Additional questions are provided for each step.

Step 1: Determine the Existing Conditions

The discussion of mineral resources for the existing conditions should reference the SMARA Mineral Lands Classification data portal (see also Figure 3.12-1). The MRZ classification should be stated.

Figure 3.12-1

MINERAL, OIL, AND GAS RESOURCES



COI-45.0 : Figure 03.12-1 Gas Oil Mineral Resources.mxd 4/6/2020

LEGEND

MINERAL RESOURCE ZONE
- MRZ-1
- MRZ-3
- MRZ-4 (not classified)

- Idle - Oil and Gas Well
- Plugged and Abandoned - Oil and Gas Well
- Plugged and Abandoned - Dry Hole
- City Boundary
- Sphere of Influence

Data from California Department of Conservation, Well Finder, 2016; California Department of Conservation, Generalized Mineral Land Classification of Orange County, California, Aggregate Resources Only, 1994.

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Step 2: Project Impacts

Because the City of Irvine has no areas classified MRZ-2, there is a low likelihood for impacts to mineral resources. If the site is classified MRZ-1, there are no significant mineral resources onsite. However, in areas that are classified MRZ-3, there is not enough data to determine whether or not mineral resources are significant. For MRZ-3, the potential for significant, onsite mineral resources, and whether extraction would be locally or regionally significant, should be determined:

- Is the project site developed and/or surrounded by urban development that is not compatible with mineral resource extraction?
    - If yes, the likelihood for mineral resource extraction to occur onsite is low, and impacts would not occur.
    - If no, what are the project site's land use and zoning designations? Do they allow resource extraction?
        - If the site is not intended for resource extraction and it would be incompatible with surrounding land uses, there is no potential for mineral resource to be impacted.
        - If the zoning or land use designation would allow for resource extraction, review the SMARA Mineral Lands Classification data portal or Figure 3-12.1, existing EIRs for the planning area, and the surrounding land uses to determine whether mineral resources could exist and whether their extraction would be locally or regionally important.

Step 3: Apply Policies, Plans, and Programs

There are no standard conditions or policies that specifically apply to mineral resources. However, the City's municipal code has a requirement that prohibits any person from "possess[ing], destroy[ing], injur[ing], defac[ing], remov[ing], dig[ging] or disturb[ing] from its natural state any of the following: plants, wildlife, artifacts, minerals, landscape structures, improvements, wood, and natural products" (§ 3-4-132).

Step 4: Determine Impact Significance

Since Irvine does not have any areas classified MRZ-2, there is little potential for impacts to mineral resources to occur. If the proposed project is on a site that would allow for mineral extraction under the land use or zoning designations, the project impact would only be significant if it can be determined that there are enough mineral resources to make them locally or regionally significant. The existing CEQA documents for the planning area in which the project is located should be consulted.

Step 5: Formulate Mitigation

It is unlikely mitigation measures would be needed for mineral resources. If so, they must follow the criteria under Step 5 in Chapter 1 of this manual.

MINERAL RESOURCES

Step 6: Determine Significance After Mitigation

As stated above, it is unlikely that significant mineral resource impacts would occur within the City of Irvine. In the event that impacts are significant, the criteria under Step 6 in Chapter 1 should be followed when mitigation measures are written for mineral resource impacts.

3.13 NOISE

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

3.13.1 Background

The following are brief definitions of terminology used in this section:

- **Sound**. A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise**. Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB)**. A unitless measure of sound on a logarithmic scale.

- **A-Weighted Decibel (dBA)**. An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq})**. The mean of the noise level averaged over the measurement period, regarded as an average level.

- **Day-Night Level (L_{dn})**. The energy average of the A-weighted sound levels during a 24-hour period, with 10 dB added to the sound levels from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL)**. The energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the levels from 7:00 PM to 10:00 PM and 10 dB added to the sound levels from 10:00 PM to 7:00 AM.[1]

Annoyance is the most common issue regarding community noise. High ambient or background noise levels are widespread and generally more concentrated in urban areas than in less developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, and disturbance of concentration) and cause annoyance (USEPA 1974). However, elevated noise levels can result in physical damage to hearing. Physical damage to hearing begins at prolonged exposure to noise levels higher than 85 dBA (California Code of Regulations, Title 29, Chapter 27, Part 1910).

3.13.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for noise. A project would normally have a significant effect on the environment if the project would result in:

[1] L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent.

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Generation of excessive groundborne vibration or groundborne noise levels.

c) For a project located within the vicinity of a private airstrip or 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, the project would expose people residing or working in the project area to excessive noise levels.

3.13.3 Determining Significance

General Approach

Noise is typically objectionable because it is disturbing or annoying. Depending on the magnitude, frequency, and duration of noise generation, noise can affect health and quality of life. Certain land uses are particularly sensitive to noise and vibration. Noise- and vibration-sensitive land uses include residential land uses, schools, hospitals, libraries, childcare facilities, and open space/recreational areas where quiet environments are necessary for enjoyment, public health, and safety. Sensitivity to noise/vibration increases during the evening and at night. Noise and vibration can interfere with sleep, speech, and television/radio and cause annoyance. Commercial and industrial uses are generally not considered noise- or vibration-sensitive land uses.

Individuals have differing sensitivities to noise. In addition, people tend to compare an intruding noise with existing background noise levels. The time noise occurs also affects people's perception of it. Consequently, the City of Irvine General Plan and Municipal Code define the City's policies regarding noise generation and noise compatibility for these sensitive land uses. The Noise Element of the General Plan establishes policies that are used to establish design criteria for siting noise-sensitive land uses proximate to major sources of noise (e.g., freeways, arterials, airports, and railroads) to minimize noise exposure, and the City's Municipal Code identifies maximum permissible sound level limits that can be generated at a property (stationary noise) to prevent a noise nuisance.

Step 1: Determine the Existing Conditions

The existing conditions section should include a discussion of the existing ambient noise environment, location of noise-sensitive land uses near the project site, and applicable regulations for noise and vibration control.

Establishing Baseline Noise Levels

The baseline ambient noise environment can be established by the following methods:

- **Ambient Noise Monitoring** can be conducted to determine existing ambient and background noise levels and calibrate noise prediction models.

- **Noise Modeling** can be conducted to determine ambient noise based on traffic and/or train noise modeling. The Federal Highway Administration (FHWA) has released traffic noise models that can calculate average noise levels (L_{eq}, L_{dn}, and CNEL) based on roadway characteristics such as traffic volumes, speed limits, and fleet mix. FHWA models include the FHWA Traffic Noise Model and the

FHWA Highway Traffic Noise Prediction Model. The Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA) have released noise models that calculate average and maximum noise levels from railroad noise (e.g., train engine, rail noise, and train horns). These include the FRA Train Horn Model. Other models may be available to calculate noise from transportation sources.

- **Other Sources:** In the absence of ambient noise measurements and noise modeling, data may be available from previous noise studies conducted in the City, including the City of Irvine General Plan.

Factors to Consider

Describing Noise and Noise Impacts

Noise and vibration impacts should be described in terms of the following noise and vibration descriptors, as applicable:

- Magnitude of noise/vibration (amplitude)
- Pitch (frequency of noise/vibration)
- Duration of the noise/vibration event
- Frequency of occurrence of noise/vibration (intermittent vs. constant)
- Proximity to sensitive receptors

Proximity to High Volume Roadways

Traffic is typically the primary source of noise that affects noise-sensitive land uses. Table 3.13-1 approximates noise levels from traffic at various speed limits and volumes to assist planners when considering placement of new noise-sensitive land uses according to the noise compatibility standards in Table 3.13-2. Proximity to other major sources of noise, including railroad or loud stationary sources of noise, should also be considered.

Table 3.13-1
Estimated Traffic Noise Levels

Speed Limit	*Daily Traffic Volumes*	*Noise Level at 50 Feet from the Roadway Centerline (dBA CNEL)*	*Approximate Distance from the Roadway Centerline to the 65 dBA CNEL Noise Contour*
25 mph	1,000	58	17 feet
	5,000	65	50 feet
	10,000	68	79 feet
	20,000	71	125 feet
	50,000	75	231 feet
30mph	1,000	59	20 feet
	5,000	66	59 feet
	10,000	69	93 feet
	20,000	72	148 feet
	50,000	76	272 feet

Table 3.13-1
Estimated Traffic Noise Levels

Speed Limit	*Daily Traffic Volumes*	*Noise Level at 50 Feet from the Roadway Centerline (dBA CNEL)*	*Approximate Distance from the Roadway Centerline to the 65 dBA CNEL Noise Contour*
35 mph	1,000	59	20 feet
	5,000	66	59 feet
	10,000	69	94 feet
	20,000	72	149 feet
	50,000	76	275 feet
40 mph	1,000	60	24 feet
	5,000	67	69 feet
	10,000	70	109 feet
	20,000	73	174 feet
	50,000	77	320 feet
45 mph	1,000	61	27 feet
	5,000	68	79 feet
	10,000	71	126 feet
	20,000	74	200 feet
	50,000	78	369 feet
50 mph	1,000	62	31 feet
	5,000	69	91 feet
	10,000	72	144 feet
	20,000	75	229 feet
	50,000	79	421 feet
55 mph	1,000	63	35 feet
	5,000	70	103 feet
	10,000	73	164 feet
	20,000	76	260 feet
	50,000	80	478 feet

Source: Federal Highway Administration, Highway Traffic Noise Prediction Model. Based on a simple lane configuration with a fleet mix of 92% light duty automobiles, 3% medium duty trucks, and 5% heavy duty trucks. Assumes 73% of traffic occurs between the hours of 7:00 AM to 10:00 PM, 13% of traffic occurs between the hours of 7:00 PM and 10:00 PM, and 14% of traffic occurs between the hours of 10:00 PM to 7:00 AM.

Proximity to John Wayne Airport

Noise from aircraft at the John Wayne Airport (JWA) is produced by takeoffs, flyovers/overflights, approaches, and landings. Each of these events results in noise exposure to sensitive receptors near the airport. The California Public Resources Code, § 21096, requires that when preparing an EIR for any project in an airport influence area, as defined by an airport land use compatibility plan, the lead agency must use the California Airport Land Use Planning Handbook as a technical resource for airport noise and safety compatibility issues. The basis for compatibility zone delineation for airports is the CNEL contours created with the Federal Aviation Administration Integrated Noise Model for private and public airports. Figure 3.13-1, *John Wayne Airport Noise Contours*, shows the noise contours for planning purposes. Noise-sensitive developments within the 60 dBA CNEL contour of the airport also need to evaluate noise impacts for single-event noise based on the City's 55 dBA L_{max}(10) indoor noise standard.

Step 2: Project Impacts

If applicable, changes in the ambient noise environment can be established by noise modeling. For noise and vibration, impacts are based on the following:

Land Use Compatibility Criteria

The noise standards in the General Plan Noise Element provide guidance for evaluating a proposed land use based on the exterior noise environment. Based on the noise compatibility criteria, the City has developed policies to ensure land use compatibility when placing new land uses. The City's policies for exterior and interior noise compatibility for noise-sensitive portions of a project are shown in Table 3.13-2. For noise-sensitive uses that contain habitable dwellings, the Noise Element establishes both exterior and interior noise level standards. Noise-sensitive exterior uses are limited to the private yards of single-family homes and to private patios that are used to enter and exit multifamily units. However, multifamily developments with balconies that do not meet the 65 dBA CNEL exterior noise level criteria are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.

Table 3.13-2
City of Irvine Interior and Exterior Noise Compatibility Standards

Land Use Categories		*Energy Average (dBA CNEL)*	
Categories	*Uses*	*Interior[1]*	*Exterior[2]*
Residential	Single family Multifamily	45[3] / 55[4]	65[5]
	Mobile Home	–	65[6]
Commercial/Industrial	Hotel, motel, transient lodging	45	65[7]
	Commercial, retail, bank, restaurant	55	–
	Office building, professional office, research and development	50	–
	Amphitheater, concert hall, auditorium, meeting hall	45	–
	Gymnasium (multipurpose)	50	–
	Health clubs	55	–
	Manufacturing, warehousing, wholesale, utilities	65	–
	Movie theater	45	–
Institutional	Hospital, school classroom	45	65
	Church, library	45	–
Open Space	Parks	–	65

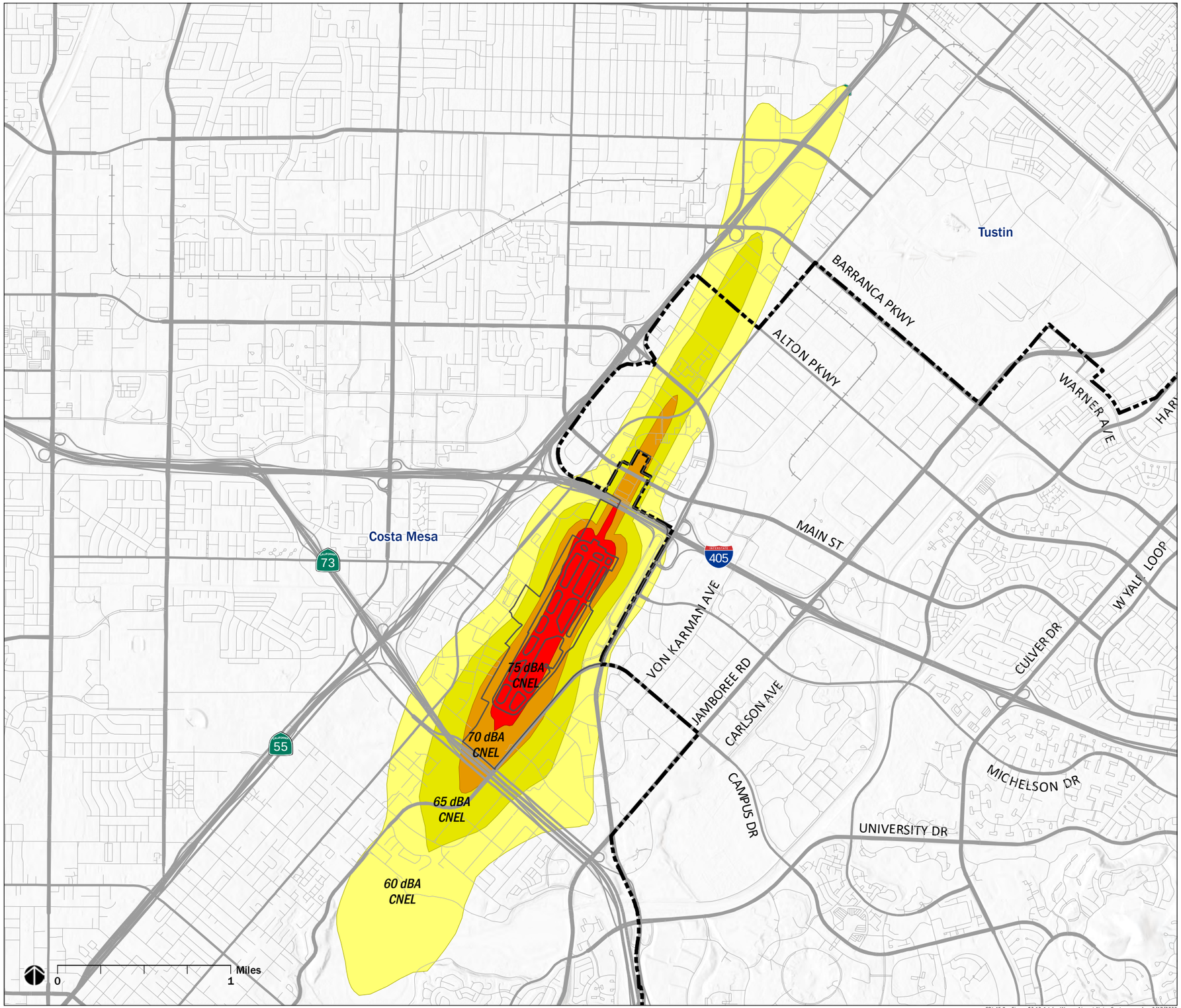
Source: Table F-1 of the City of Irvine General Plan Noise Element.
Interpretation:
[1] Interior environment excludes bathrooms, toilets, closets and corridors.
[2] Outdoor environment limited to private yard of single-family homes, multifamily private patio or balcony served by a means of exit from inside, mobile home park, hospital patio, park's picnic area, school's playground, and hotel and motel recreation areas.
[3] Noise requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided pursuant to Appendix Chapter 12, Section 1208 of UBC.
[4] Noise level with open windows, if they are used to meet natural ventilation requirement.
[5] Multifamily developments with balconies that do not meet the 65 CNEL are required to provide occupancy disclosure notices to all future tenants regarding potential noise impacts.
[6] Exterior noise level such that interior noise level will not exceed 45 dB CNEL.
[7] Except those areas affected by aircraft noise.

Nontransportation/Stationary Source Noise Standards

The City's Noise Ordinance (Irvine Municipal Code Title 6, Division 8, Chapter 2), adopted in 1975 and revised in February 2005, establishes the maximum permissible noise level from a stationary source that may intrude into adjoining property. Section 6-8-204 (General Provision) of the ordinance establishes noise level standards for various land use categories affected by stationary noise sources. For residential properties, noise generated offsite is prohibited from exceeding 55 dBA during daytime hours (7:00 AM to 10:00 PM) and 50 dBA during the nighttime hours (10:00 PM to 7:00 AM) for more than 30 minutes in any hour at the property line. For events with shorter duration, these noise levels are adjusted upward accordingly, as shown in Table 3.13-3.

Figure 3.13-1

JOHN WAYNE AIRPORT NOISE CONTOURS



LEGEND

JOHN WAYNE AIRPORT 2012 ANNUAL NOISE CONTOURS
- 60 dBA CNEL
- 65 dBA CNEL
- 70 dBA CNEL
- 75 dBA CNEL
- City Boundary

COI-45.0 : Figure 03.13-1 John Wayne Airport Noise Contours.mxd 2/17/2020

Recreated from Orange County Airport Land Use Commission, Airport Environs Land Use Plan for John Wayne Airport, 2008.

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Table 3.13-3
City of Irvine Exterior Noise Standards by Noise Zone

Noise Zone	Time Interval	Noise Standard (L_n)				
		L_{50}	L_{25}	L_8	L_2	L_{max}
Zone 1: All hospitals, libraries, churches, schools, and residential properties	7:00 AM to 10:00 PM	55	60	65	70	75
	10:00 PM to 7:00 AM	50	55	60	65	70
Zone 2: All professional office and public institutional properties	Anytime	55	60	65	70	75
Zone 3: All commercial properties excluding professional office properties	Anytime	60	65	70	75	80
Zone 4: All industrial properties	Anytime	70	75	80	85	90

Source: City of Irvine, Municipal Code, Title 6, Division 8, Chapter 2, Noise.
Notes:
Noise standards shall be reduced by 5 dB for impact noise, predominant tone noise, or for noises consisting of speech or music. In the event that the noise source and the affected property are within different noise zones, the noise standards of the affected property shall apply.
Maintenance of property may exceed the noise standards, so long as maintenance activities that exceed the noise limits in Table 3.13-2 are restricted to the hours of 7:00 AM through 7:00 PM Monday through Friday or 9:00 AM through 6:00 PM Saturdays. In addition, the City further restricts the maximum noise levels of leaf blowers and hours of use to 8:00 AM through 5:00 PM Monday through Friday and 9:00 AM through 5:00 PM on Saturdays.
Commercial deliveries or pickups for commercial properties that share a property line with any residential property are required to limit the hours of delivery/pickup service to 7:00 AM through 10:00 PM daily, as outlined in the City's Noise Ordinance.

Aircraft Noise Compatibility Standards

As a vehicle approaches, passes by, and then recedes into the distance, the sound level rises, reaches a maximum, and then fades into the background noise. The sound level reached during this pass-by event is called single-event noise. Single-event noise is important for determining the maximum amount of noise that would result in nighttime awakenings and/or classroom speech interruptions.

The City requires, as part of the Noise Element, that any sensitive land uses in the 60 dBA CNEL contour for aircraft noise sources also comply with the City's single-event noise standard. The single-event noise standard is above and beyond what other jurisdictions and agencies have adopted and is a supplemental noise criteria. In other words, the City's single-event noise threshold is in addition to the Title 21 and Title 24 interior noise standards of 45 dBA CNEL. This standard is in terms of the $L_{max}(10)$ noise level, which is the loudest 10 percent of aircraft noise events. The City requires the indoor $L_{max}(10)$ noise level for residences to be less than 65 dBA during daytime hours (7:00 AM to 7:00 PM) and less than 55 dBA during evening and nighttime hours (7:00 PM to 7:00 AM). Since the loudest noise associated with aircraft is essentially the same during the day or evening, homes must be constructed to comply with the more stringent 55 dBA criteria. The $L_{max}(10)$ levels cannot be forecast using computer models or other analytical tools and must be measured for a given time.

Construction Noise Standards

The City's Noise Ordinance regulates the timing of construction activities and includes special provisions for sensitive land uses. Section 6-8-205.A (Special Provisions) of the Municipal Code states that construction activities and agricultural operations may occur between the hours of 7:00 AM and 7:00 PM Monday through Friday, and 9:00 AM to 6:00 PM on Saturdays. No construction is permitted outside of these hours or on Sundays and federal holidays, except Columbus Day, unless a temporary waiver is granted by the Chief Building Official or his or her authorized representative. Trucks, vehicles, and equipment that are making or involved with deliveries, loading, or transfer of materials, equipment

service, or maintenance of any devices or appurtenances for or within any construction project in the City are also subject to these prohibitions.

Vibration

Vibration Annoyance

Groundborne noise is the vibration of floors and walls that may cause rattling of items such as windows or dishes on shelves, or a rumbling noise. The rumbling is created by the motion of the room surfaces, which act like a giant loudspeaker. The FTA provides criteria for acceptable levels of groundborne vibration based on the relative perception of a vibration event for vibration-sensitive land uses (see Table 3.13-4).

Table 3.13-4
Groundborne Vibration and Noise Impact Criteria: Human Annoyance

Land Use Category	*Max Lv (VdB)[1]*	*Description*
Workshop	90	Distinctly felt vibration. Appropriate to workshops and nonsensitive areas.
Office	84	Felt vibration. Appropriate to offices and nonsensitive areas.
Residential – Daytime	78	Barely felt vibration. Adequate for computer equipment.
Residential – Nighttime	72	Vibration not felt, but groundborne noise may be audible inside quiet rooms.

Source: FTA 2006
[1] As measured in 1/3-octave bands of frequency over the frequency ranges of 8 to 80 Hz.

Vibration-Related Structural Damage

The level at which groundborne vibration is strong enough to cause structural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards, shown in Table 3.13-5. Vibration-related problems generally occur due to resonances in the structural components of a building. The maximum vibration amplitudes of the floors and walls of a building will often be at the resonance frequencies of various components of the building. That is, structures amplify groundborne vibration. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. According to the Caltrans "Transportation Related Earthborne Vibration" (2002), extreme care must be taken when sustained pile driving occurs within 25 feet of any building. The threshold at which there is a risk of architectural damage to normal houses with plastered walls and ceilings is 0.2 in/sec.

Table 3.13-5
Groundborne Vibration and Noise Impact Criteria – Structural Damage

Building Category		PPV (in/sec)	VdB
I.	Reinforced concrete, steel, or timber (no plaster)	0.5	102
II.	Engineered concrete and masonry (no plaster)	0.3	98
III.	Nonengineered timber and masonry buildings	0.2	94
IV.	Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2006.
RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Screening Criteria

Screening criteria are based on standards adopted by the City of Irvine. The screening criteria provide assistance in responding to the City's initial study checklist questions and can help determine if further study is needed to determine impact significance. CEQA screening criteria are not bright-line thresholds that indicate significant impacts, but they help determine when impacts would not occur or are *de minimus* so that a detailed analysis is not necessary.

Traffic Noise

The traffic noise thresholds used by the City are based on human tolerance to noise (see Table 3.13-6) and are widely used for assessing traffic noise impacts. In general, people tend to compare intruding noise with the existing background noise. If the new noise is readily identifiable or considerably louder than the background noise level, it has the potential to be objectionable or annoying (Caltrans 1998). Consequently, the noise threshold for increases in traffic noise levels is based on the potential for traffic noise to become considerably louder than the ambient noise level. In general, noise levels must increase by 10 dBA in order to double ambient noise levels. An increase of 5 dBA is readily perceptible to the public and a 3 dBA increase is barely perceivable to the average healthy human ear (Caltrans 1998).

Table 3.13-6
Change in Sound Pressure Level, dB

Change in Apparent Loudness	
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen 1988.

Noise Compatibility

The noise standards in the City of Irvine Noise Element are used to evaluate the acceptability of the noise levels for noise compatibility purposes (see Table 3.13-2). In addition, if the project is within the airport influence area of John Wayne Airport, 24-hour and single-event noise from aircraft should also be evaluated in accordance with the interior noise requirements of Title 21 of the California Code of

Regulations (e.g., 45 dBA CNEL) and the City's 55 dBA $L_{max}(10)$ single-event supplemental noise criteria.

Stationary Source Noise

The City's Noise Ordinance establishes the maximum permissible noise level that may intrude into an adjoining property or dwelling unit (see Table 3.13-3).

Construction

The Noise Ordinance regulates the timing of construction activities and includes special provisions for sensitive land uses. The potential for construction noise impacts to be objectionable depends on the magnitude of noise generated by the construction equipment, the frequency of noise sources during the construction day, and total duration of construction activities.

Vibration

The FTA vibration criteria are used to evaluate vibration annoyance and structural damage (see Tables 2.13-4 and 2.13-5). The potential for construction-related vibration annoyance impacts to be objectionable depends on the magnitude of vibration generated by the construction equipment, the frequency of occurrence of the vibration during the construction day, and total duration of construction activities.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and would preclude the need for additional analysis. This must be substantiated in the environmental analysis.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs are not able to reduce the significance, these impacts are potentially significant. In some cases, an impact may not be significant if it is consistent with the general plan, the City's vision for the area, or other existing plans or guidelines for the project site. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

For noise, mitigation measures are usually based on the technical analysis. Appendix D lists sample mitigation measures for noise and vibration control.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.14 POPULATION AND HOUSING

The Irvine General Plan, including the Housing Element, and other adopted population growth policies and projection tools (e.g., Orange County Projections, Regional Housing Needs Assessment) include forecasts of population, housing, and employment trends. Population and housing projections are used to plan the infrastructure and level of service required to support the future population of the City. When actual growth exceeds the projections, deficiencies in these systems and services may result. According to State CEQA Guidelines § 15064(e): "Economic and social changes resulting from a project shall not be treated as significant effects on the environment. Economic or social changes may be used, however, to determine that a physical change shall be regarded as a significant effect on the environment." Population, housing, and employment growth are examples of economic and social changes that may cause physical changes in the environment. The impacts of those physical changes must be analyzed.

3.14.1 Background

Local and Regional Planning Projections

The project area's demographics are best examined in the context of existing and projected population, housing, and employment for the Orange County region and the City of Irvine. Information on population, housing, and employment for the project area is available from several sources, as discussed below.

Orange County Projections

Orange County agencies, including the City of Irvine, have executed a Memorandum of Understanding with the Orange County Council of Governments (OCCOG) to contract with the Center for Demographic Research at California State University, Fullerton, to develop and periodically update demographic projections for Orange County.

OCCOG approved the most recent update to the Orange County Projections, OCP-2018, in September 2018. OCP-2018 has the most up-to-date demographic projections for Orange County cities and unincorporated areas for five-year intervals from 2020 through 2045.

Table 3.14-1 provides a summary of the forecasts for population, housing, and employment for Orange County and the City of Irvine between 2020 and 2045 from OCP-2018 projections.

Table 3.14-1
OCP-2018 Projections for Orange County and the City of Irvine, 2020–2045

	2020	*2045*	*Change 2020–2045*	*% Change 2020–2045*
Total Population				
City of Irvine	281,534	327,664	46,130	16.4%
Orange County	3,268,084	3,534,620	266,536	8.2%
Total Dwelling Units				
City of Irvine	108,866	126,573	17,707	16.3%
Orange County	1,122,178	1,206,257	84,079	7.5%
Total Employment				
City of Irvine	282,215	330,170	47,955	17.0%
Orange County	1,773,571	1,980,433	206,862	11.7%

Source: Center for Demographic Research, CSUF. 2018. Orange County Projections.

As shown in Table 3.14-1, between 2020 and 2045 the population of the City of Irvine is projected to increase by 46,130 persons, or 16.4 percent of its 2020 population. The number of dwelling units is forecast to increase by 17,707 units, or 16.3 percent of the unit count in 2020, and employment in the City is projected to increase by 47,955 jobs, or 17.0 percent of 2020 employment.

Jobs-Housing Ratio

The jobs-housing ratio is a general measure of the balance between the number of jobs and number of dwelling units in a geographic area without regard to economic constraints or individual preferences. The jobs-housing ratio is one indicator of a project's effect on growth and quality of life in the project area. No ideal jobs-housing ratio is adopted in state, regional, or city policies—jobs-housing goals and ratios are advisory only. The Southern California Association of Governments (SCAG) applies the jobs-housing ratio at the regional and subregional level as a tool for analyzing the fit between jobs, housing, and infrastructure.

Currently in the City of Irvine and Orange County as a whole, jobs are more readily available than housing opportunities. Based on the OCP-2018 projections, the County provided 1.58 jobs per dwelling unit in 2020. In the future, Orange County is expected to remain jobs-rich as a result of economic and demographic forces expected within the planning period. OCP-2018 projects that the County's jobs-housing ratio will be 1.64 in 2045.

Related Planning Programs

In addition to the OCP, the following adopted projections, plans, and policies address the future of the City of Irvine and provide benchmarks for evaluating the potential population, housing, and employment impacts of a proposed project.

- Regional Housing Needs Assessment (RHNA)
- SCAG Regional Transportation Plan/Sustainable Communities Strategy
- City of Irvine General Plan and Housing Element

3.14.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for determining population and housing impacts. A project would normally have a significant effect on the environment if the project would:

a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

3.14.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines.

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for population and housing should take into account the questions in Chapter 1, Section 1.2. Additional questions or points of discussion that pertain specifically to population and housing are provided for each step in this section.

Step 1: Determine the Existing Conditions

For population and housing analysis, it is important to not only determine the existing site conditions (e.g., Is there housing onsite?), but also the existing conditions of the City.

- Is there housing onsite? What type?
- What is the onsite population?
- What are the City's existing and projected population, housing, and employment inventories?

Step 2: Project Impacts

The proposed project's impacts are based on whether or not the project would require existing housing and/or populations to be removed from the site and if it would substantially contribute to the City's projected population, housing, and employment inventories. The proposed project's impacts should be based on the following questions:

For threshold a:

- Does the proposed project cause an increase in resident/worker population?
    - If yes, would the resulting population increase be substantial?
    - Does it change the jobs-housing ratio? If so, this does not necessarily cause a significant impact. The change in the jobs-housing ratio should be discussed in the impact analysis.
    - If no, or if the population increase would be negligible, then there would be no or less than significant impacts.

- Does the project extend utilities, roadways, or public services to an area that is currently not served and has no existing population?

For threshold b:

- Does the proposed project require the removal of existing homes or populations from the project site?
    - If the site is vacant or uninhabited, then there would be no impacts.
    - If the site is occupied, impacts are potentially significant.

Step 3: Apply Plans, Policies, and Programs

There are no required population and housing PPPs. However, the General Plan Housing Element and the Affordable Housing Implementation Procedure (Chapter 2-3 of the City's Zoning Ordinance) contain policies that guide housing development in the City, as directed by the RHNA. For example, the City's Inclusionary Housing Ordinance should be considered in the analysis of a proposed project that consists of 50 residential units or more, because it requires that a minimum of 15 percent of the total units be affordable

units. The breakdown of income categories for that 15 percent, along with other requirements and guidelines, are detailed in the Zoning Ordinance.

In the event that relocation is required, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 US Code § 4601), and regulations in the Code of Federal Regulation Title 49 Part 24 should be referenced.

Step 4: Determine Impact Significance

The Population and Housing section of the environmental document should examine the potential for direct and indirect socioeconomic impacts of a proposed project on the City of Irvine and region, including changes in population, employment, and demand for housing, particularly housing cost/rent ranges defined as "affordable." The latest data and report for the OCP should be used as a reference point for discussing population, housing, and employment growth and trends.

For threshold a, population and housing impacts occur when the proposed project would cause substantial direct or indirect population growth that has not been accounted for in the General Plan or an existing Planning Area plan. If the proposed project is consistent with the General Plan or the City's vision for the area, as documented through Planning Area plans and their supporting environmental analyses, the impact would likely be less than significant. All significance conclusions must be substantiated in the analysis.

For threshold b, if populations and households are removed from a project site that is designated for residential uses without providing replacement housing, impacts would be significant.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures must be feasible to be enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure. Potential mitigation could include revising the proposed land uses to improve the jobs-housing balance.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.15 PUBLIC SERVICES

As cities grow, the increasing population creates a greater demand for public services, including police protection, fire protection, school services, and other public services, such as libraries. When a proposed project includes the construction of residential units and/or non-residential square footage, it increases the overall population and/or day-time population in the area. The increased population creates a new demand for services that can result in the need to construct new buildings to house these public services. The construction and use of these buildings may cause environmental impacts and may, in turn, indirectly increase residential development in the area. The public services discussion per CEQA should determine how much demand a proposed project would create on an existing level of service for each public service provider and whether this demand would cause significant environmental impacts. Growth-inducing impacts may be discussed in this section or in a separate section of an EIR. A brief discussion of Irvine's public service providers is provided.

3.15.1 Background

Fire Service

Fire protection in the City of Irvine is provided by the Orange County Fire Authority (OCFA). The majority of the City is in Division 2 of the OCFA, but there are portions in Divisions 4 and 5 as well. The OCFA serves all of the unincorporated portions of the county and some cities with which they have service agreements. Table 3.14-1 shows the OCFA fire stations that serve Irvine and their locations. The fire station locations are also shown in Figure 3.15-1, *Police, Fire, and Health Care Infrastructure*.

Table 3.15-1
OCFA Stations Serving Irvine

Station	*Location*
OCFA Division 2	
Station 4	2 California Avenue
Station 6	3180 Barranca Parkway
Station 20	7050 Corsair
Station 26	4691 Walnut Avenue
Station 27	12400 Portola Springs Road
Station 28	17862 Gillette Avenue
Station 36	301 East Yale Loop
Station 38	26 Parker
Station 47	47 Fossil Road
Station 51	18 Cushing
Station 55	4955 Portola Parkway

Source: OCFA. 2019. https://www.ocfa.org/aboutus/departments/OperationsDirectory/Division2.aspx.

OCFA Response Time Guidelines

The OCFA has guidelines for the provision of services when an emergency call is received until the first unit is on scene:

- First-in engines should arrive on-scene to medical aids and/or fires within 5 minutes, 80 percent of the time.
- First-in truck companies should arrive on-scene to fires within 12 minutes, 80 percent of the time.
- First-in paramedic companies should arrive on-scene at all medical aids within 10 minutes, 90 percent of the time.
- Response times tie in with workload. A unit should have less than 3,500 responses per year to be a reliable asset to meet the response time guidelines.

Police Service

The City of Irvine Police Department (IPD) operates out of the main headquarters at 1 Civic Center Plaza. The City is divided into three separate geographic units, which are listed in Table 3.15-2. The neighborhoods within each geographic unit are also shown in Table 3.15-2. Figure 3.15-1, *Police, Fire, and Health Care Infrastructure*, shows the location of police stations that serve the City.

Table 3.15-2
Irvine Police Department Geographic Units

Unit	*Neighborhoods*
Portola	Cypress Village, Lower Peter's Canyon, North Park, North Park Square, Northwood, Northwood Point, Orange County Great Park, Orchard Hills, Portola Springs, Racquet Club, Stonegate, West Irvine, Woodbury, and Woodbury East
Crossroads	College Park, Deerfield, El Camino Glen, Greentree, Harvard Square, Heritage Park, Los Olivos, Oak Creek, Old Towne, Orange Tree, Quail Hill, Shady Canyon, Smoketree, The Colony, The Meadows, The Ranch, The Spectrum, The Willows, Walnut Square, Westpark, Windwood, and Woodbridge
University	Rancho San Joaquin, Turtle Ridge, Turtle Rock, University Park, University Town Center, West Park Village I, Bommer Canyon Open Space Preserve, Orchard Hills Open Space Preserve, and Quail Hill Open Space Preserve

Source: Irvine Police Department 2019.

School Services

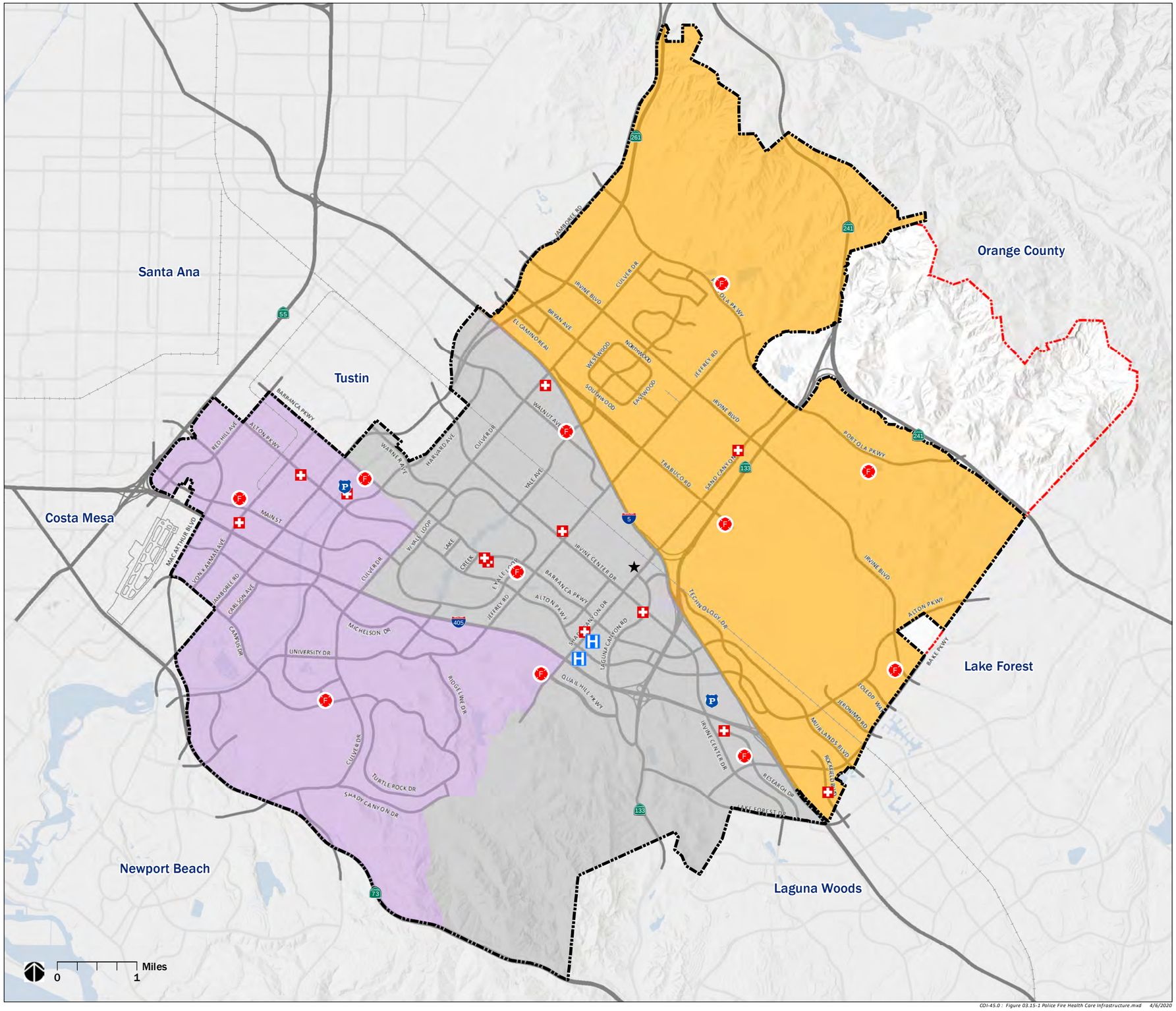
The City of Irvine is within the attendance boundaries of four school districts: Irvine Unified School District (USD), Tustin USD, Saddleback Valley USD, and Santa Ana USD. The jurisdictional boundaries of these four school districts are shown in Figure 3.15-2, *School Districts*.

Park Services

Section 3.16, *Recreation*, provides details on the park and recreation facilities in the City of Irvine. As with recreational land uses, parks can be overused when population levels begin to increase, causing deterioration of park space.

Figure 3.15-1

POLICE, FIRE, AND HEALTH CARE INFRASTRUCTURE



LEGEND

- Urgent Care Facilities
- Hospital
- Animal Shelter
- Fire Station
- Police Facility

Irvine Geopolice Zones
- Crossroads
- Portola
- University

- City Boundary
- Sphere of Influence

Data provided by the City of Irvine on 3/24/2020

CDI-45.0 : Figure 03.15-1 Police Fire Health Care Infrastructure.mxd 4/6/2020

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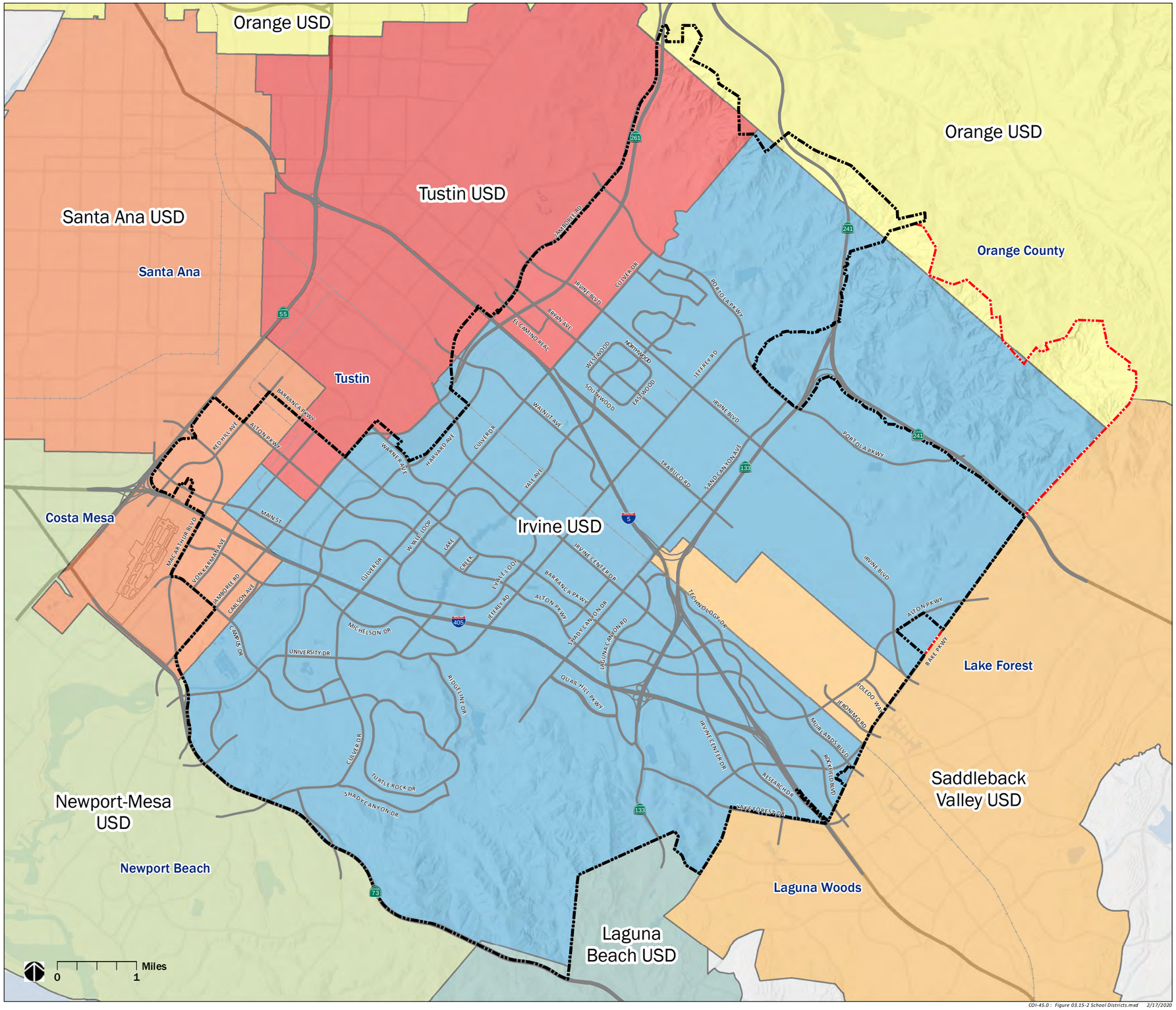
Figure 3.15-2

SCHOOL DISTRICT BOUNDARIES



LEGEND

School Districts

- Irvine
- Laguna Beach
- Newport-Mesa
- Orange
- Saddleback Valley
- Santa Ana
- Tustin
- City Boundary
- Sphere of Influence

COI-45.0 : Figure 03.15-2 School Districts.mxd 2/17/2020

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Quimby Act

In 1975, the State enacted the Quimby Act (Government Code § 66477). The Quimby Act authorizes only cities and/or counties to require the dedication of parkland and/or fees. Special districts must work with cities and/or counties to receive parkland and/or in-lieu fees. The fees must be paid and land conveyed directly to the appropriate city and/or county agency. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities. Additionally, the Quimby Act requires that the fees/improvements be used only for the purpose of rehabilitating existing park or recreational facilities to serve the subdivision.

The legislation established a maximum parkland dedication standard of five acres per 1,000 population for a new subdivision development, unless the amount of existing neighborhood and community parkland exceeds that limit.

City of Irvine Park Requirements

The City of Irvine's park requirements are established in the municipal code § 5-5-1004, Park Dedication, which implements the Quimby Act. For every five required acres per 1,000 people, two acres must be used as community parks, and three acres must be used as neighborhood parks. In addition, the City collects park dedication in-lieu fees when residential building permits are issued in subdivisions.

Section 5-5-1004, subsections C and D, authorize the Planning Commission, upon the recommendation of the Community Services Commission, to determine distribution of public/private neighborhood park land.

Other Public Services

Other public services that are typically addressed under CEQA include libraries. When population is increased, the City's library system may become overused, requiring a need for additional library space. The construction of new library space, as with any other development project, can create environmental impacts. Libraries in the City of Irvine include:

- Heritage Park Regional Library, 14361 Yale Avenue
- University Park Library, 4512 Sandburg Way
- Katie Wheeler Library, 13109 Old Myford Road

Library Performance Standards

Both the City and the County have library performance standards:

- City of Irvine: 0.5 square foot of library space and 2.5 volumes per capita
- Orange County Public Library System: 0.2 square foot of library space and 1.5 volumes per capita

In 2005, the City established an ad hoc library task force, and in October 2006 designated a standing Library Services Advisory Committee. A library needs assessment study to evaluate the state of library services and identify options for enhanced library services within the City was completed in October 2006. The study determined that new facilities were needed, especially in light of anticipated population growth. The service level recommended in the library needs assessment study was 0.5 square foot of library space and 2.5 volumes per capita instead of the County standard of 0.2 square foot of library space and 1.5 volumes per capita.

3.15.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for public services. A project would normally have a significant effect on the environment if the project meets the following conditions.

a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:
    - Fire protection?
    - Police protection?
    - Schools?
    - Parks?
    - Other public facilities?

3.15.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analyst should look at the questions in Section 1.2. Additional questions that pertain specifically to public services are provided in this section for each step of the "General Approach for Environmental Analysis" flow chart.

Step 1: Determine the Existing Conditions

The existing conditions should determine the location of the nearest public service facilities to the proposed project and whether the project would be within the service areas of these facilities. It should also include a discussion of the characteristics of the current service, based on the following questions:

Fire and Police Services

- How many emergency calls are responded to on a yearly basis?
- What is the current response time to emergency and nonemergency calls?
- Are OCFA and IPD currently meeting their performance standards for response times and staffing goals?

Schools

- What are the enrollment figures (current academic year) for public schools that would serve the project? (This information can be gathered from the district directly or through the school Accountability Reports, usually found on a district's website.)
- What are the current capacities of each of the public schools that would serve the proposed project?

Parks

- What park and/or recreational facilities would serve the project site?
- What is the current ratio of park space per capita?

Libraries

- What is the current percentage of library space and number of volumes per capita? Are libraries meeting their performance standards?

Step 2: Project Impacts

For public services, impacts are based on how an increase in population, whether it is permanent (residents) or temporary (workers), would affect the public service providers' ability to meet their demands. If an increase in population is substantial enough to require the construction of new facilities or the addition of new service units to meet growing needs, impacts would be potentially significant. The impact discussion should take into account all short-term and long-term, physical and operational, and project-related and cumulative impacts. The degree of impact is based on:

- The determination of whether the project would cause the service provider's performance standard to be exceeded.
- Feedback and/or discussions with a representative of the service provider.

For EIRs, service questionnaires are typically mailed to service providers to gauge the potential impacts caused by the proposed project. These should be mailed after the Initial Study has been released, at the start of EIR analysis.

For each category, the following questions should be asked:

- For fire, would the proposed project cause OCFA to exceed their response time guidelines and/or workload capacity?
- For police, would the proposed project cause IPD to exceed their response time guidelines and/or their police officer staffing goal?
- For schools, would the proposed project cause the local schools to exceed their existing capacities?
- For libraries, would the proposed project increase the population enough to cause libraries to not meet their performance standard?

Estimating Future Student Population

Once a project description has been established and the proposed project's housing quantity and type is known, the future student population can be estimated. This is used to determine whether a project would cause an increase in student population and whether new facilities would be needed. Each district in Irvine has different student generation rates that are continually updated.

PUBLIC SERVICES

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and would preclude the need for additional analysis. This must be substantiated in the environmental analysis.

Fire

All projects must comply with the OCFA codes, ordinances, and standard conditions.

Police

Proposed projects must meet the City of Irvine standard conditions for emergency access, construction site security, and the uniform security code.

School Services

Senate Bill 50

Senate Bill 50 (SB 50), which passed in 1998, provided a comprehensive school facilities financing and reform program and enabled a bond issue to be placed on the ballot. The provisions of SB 50 allowed the state to offer funding to school districts in the form of grants to acquire school sites, construct new school facilities, and modernize existing school facilities. SB 50 also established a process for determining the amount of fees developers may be charged to mitigate the impact of development on school facilities. Under this reform, a school district could charge fees above the statutory cap only under specified conditions, and then only up to the amount of funds that the district would be eligible to receive from the state. According to Government Code § 65995, the development fees authorized by SB 50 are deemed "full and complete school facilities mitigation."

Library Services

There are no PPPs that apply specifically to library services and the City of Irvine does not have a citywide library impact fee at the time this manual was prepared.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, these impacts are potentially significant. In some cases, an impact may not be significant if it is consistent with the general plan, the City's vision for the area, or other existing plans or guidelines for the project site. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

For public services, mitigation measures are usually based on the input that is provided in the service provider's responses to service questionnaires or communications with the provider. They vary from project to project. For school services, the fees paid through SB 50 are considered full and complete school facility mitigation (Government Code § 65995).

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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3.16 RECREATION

Environmental impacts to recreation are measured as impacts to recreational parks and facilities. As population increases, demand is greater for recreational parks and facilities. Existing recreational areas are overused and begin to deteriorate if new facilities are not constructed. The construction of new facilities would impact the physical environment.

3.16.1 Background

The City's Municipal Code § 5-5-1004, Park Dedication implements the 1975 Quimby Act (Government Code § 66477). The Quimby Act authorizes only cities and/or counties, as part of the State Subdivision Map Act, to require the dedication of parkland and/or fees. The fees must be paid and land conveyed directly to the appropriate city and/or county agency and not to a special district or homeowners association. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities. Additionally, The Quimby Act requires that the fees/improvements be used only for the purpose of rehabilitating existing neighborhood park or recreational facilities to serve the subdivision.

Municipal code § 5-5-1004, subsections C and D, authorize the Planning Commission, upon the recommendation of the Community Services Commission, to determine distribution of public/private neighborhood parks and/or fees. Additionally, the municipal code requires that all parks comply with the most current, applicable national and state codes, regulations, and standards.

Provision of City parkland consistent with the Quimby Act requires that Irvine monitor the ratio of residents to parkland. Maintenance of this ratio not only ensures that the provision of park space keeps pace with demand caused by population growth, but also prevents the deterioration of existing facilities from overuse. Irvine established the required parkland space for subdivisions at five acres per 1,000 residents, which is consistent with the Quimby Act. The implementation of a project can affect this ratio; therefore, individual projects have the potential to increase use of park facilities and hasten their deterioration. For this reason, it is important that environmental analysis disclose a project's potential to create such impacts and identify any need for additional facilities.

The City of Irvine allocates park space per 1,000 residents as follows:

- Community parks: 2 acres
- Neighborhood parks: 3 acres

There are five types of parks in the City of Irvine:

- Regional open space
- Regional parks
- Community parks
- Public neighborhood parks
- Private neighborhood parks

Regional Parks

Mason Regional Park is operated by the County but is located within the City.

RECREATION

Community Parks and Facilities

Table 3.16-1 details the community parks and facilities available in Irvine.

Table 3.16-1
Existing Irvine Community Recreational Parks and Facilities

Name	*Location*	*Size*
Bommer Canyon	11 Bommer Canyon Road	15 acres
Colonel Bill Barber Marine Corps Memorial Park	4 Civic Center Plaza	48 acres (including roller hockey rink)
Cypress Community Park	255 Visions	17.9 acres
David Sills Lower Peters Canyon Park	3901 Farwell	10.3 acres
Deerfield Community Park	55 Deerwood West	10.1 acres
Harvard Athletic Park	14701 Harvard Avenue	26.9 acres
Heritage Park	14301 Yale Avenue	36.5 acres
Hicks Canyon Park	3864 Viewpark	16.7 acres
Las Lomas Community Park	10 Federation Way	18.3 acres
Los Olivos Community Park	101 Alfonso	12.5 acres
Mark Daily Athletic Field	308 W. Yale Loop	9.8 acres
Mark Ward Community Park – Woodbridge; Lakeview Senior Center	20 Lake Road	22.0 acres
Northwood Community Park	4531 Bryan	17.7 acres
Oak Creek Community Park	15616 Valley Oak	11.7 acres
Orange County Great Park (under construction)	6950 Marine Way	1,300 acres
Portola Springs Community Park	900 Tomato Springs	32 acres
Quail Hill Community Park	35 Shady Canyon Drive	16.9 acres
Rancho San Joaquin Community Park and Rancho Senior Center	3 Ethel Coplen Way	2.1 acres
Trabuco Center	5701 Trabuco Road	3.2 acres
Turtle Rock Community Park	1 Sunnyhill	25.1 acres
University Community Park	1 Beach Tree Lane	16.3 acres
Windrow Community Park	285 East Yale Loop	18.9 acres
Woodbury Community Park	130 Sanctuary	10.7 acres

Notes: Refer to the City's parks inventory website for an updated list of park amenities.
https://www.cityofirvine.org/community-services-department/parks-inventory

Neighborhood Parks and Facilities

The public and neighborhood parks and recreational areas are typically open space with none or very few amenities. Table 3.16-2 lists neighborhood parks and recreational areas in the City, current as of 2019. For an up-to-date list of neighborhood parks, visit the City's Public Parks and Facilities Inventory:

http://legacy.cityofirvine.org/civica/filebank/blobdload.asp?BlobID=14455

Table 3.16-2
Public Parks and Recreation Areas

• Alderwood Park (4 Northwood) • Blue Gum Park (14 Aberdeen) • Bommer Vista Point (340 Summit Park Dr.) • Brywood Park (15 Westwood) • Canyon Park (6 Canyon Park) • Carrotwood Park (60 Bennington) • Chaparral Park (19032 Turtle Rock Drive) • Citrusglen Park (12170 Citrusglen) • College Park (14471 Mayten) • Comstock Park (5 Countryside Drive) • Coralwood Park (12 Fremont) • Creekview Park (300 E. Yale Loop) • Cypress Grove (275 Rush Lilly) • Dovecreek Park (3 Dovecreek) • Eastwood Park (130 Frontier)	• Flagstone Park (21 Flagstone Drive) • Hoeptner Park (5331 Hoeptner) • Homestead Park (8 Cliffwood) • Knollcrest Park (2065 Knollcrest) • Meadowood Park (4685 Meadowood) • Orchard Park (1 Van Buren) • Pepperwood Park (55 Columbus) • Pinewood Park (11 Hudson) • Plaza Park (610 Paseo Westpark) • Presley Park (4732 Karen Ann Lane) • Racquet Club Park (4030 Robon) • Ranch Park (5161 Royale)	• San Carlo Park (15 San Carlo) • San Leandro Park (12 Paseo Westpark) • San Marco Park (1 San Marco) • Sepulveda Vista Point (4 Federation Way) • Settlers Park (35 Settlers Way) • Silkwood Park (1 Mayflower) • • Stonegate Park (280 Honors) • Sweet Shade (15 Sweet Shade) • Sycamore Park (27 Lewis) • Valencia Park (3081 Trevino Road) • Valley Oak Park (16001 Valley Oak) • Willows Park (4562 Ranchgrove)

3.16.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for determining recreation impacts. A project would normally have a significant effect on the environment if:

a. The project would increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

b. The project includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

3.16.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for recreation should take into account the questions in Section 1.2. Additional questions that pertain specifically to recreation are provided in this section for each step.

Step 1: Determine the Existing Conditions

- Are any of the recreation or park facilities listed in Tables 3.16-1 or 3.16-2 on or near the project site?
- Where are the nearest recreational facilities to the project site and what are they?
- In what condition are the existing facilities that may be used by the proposed project?

Step 2: Project Impacts

A description of project characteristics and the project impact analysis should be based on the following questions. These questions can be used for both thresholds "a" and "b."

- Does the proposed project physically affect an existing recreational facility?

- Would the proposed land uses increase the local population in a way that would cause an increase in recreational facility use in the surrounding area?

- Would the proposed project involve the construction of new public or private recreational facilities?

Step 3: Apply Plans, Policies, and Programs

- Is the proposed project within one of the City's Open Space Implementation Action Program Districts (Chapter 8.2 of the City's Zoning Ordinance)?

- If the proposed project includes a public park, it is generally subject to Standard Conditions 1.12, 2.17, 2.21, 2.22, and 3.11, and 4.2.

- If the proposed project includes a private park, it is generally subject to Standard Conditions 2.21, 3.11, 3.12, 4.2, 4.3, and 5.4.

- If the proposed project includes a private or public trail dedication, it is generally subject to Standard Conditions 2.14, 2.15, 2.16, and 2.22.

- Residential projects are subject to Standard Condition 2.18.

- As outlined in § 5-5-1004.A.1. of the City's Municipal Code, all subdivisions must:
    - Dedicate land as park and recreation space to serve the subdivision; and/or
    - Provide improvements/amenities; and or
    - Pay the in-lieu fees to the City for the construction of new or rehabilitation of existing parks or recreational facilities.

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, these impacts are potentially significant. For recreation, impacts may be beneficial to the City if the proposed project includes the construction of a new facility or park that can alleviate overuse of existing facilities. However, the discussion should also determine whether the construction of new or expanded facilities would cause environmental impacts. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

Generally, compliance with Irvine's PPPs, including payment of Quimby Act fees, results in less than significant recreational impacts. However, if impacts remain potentially significant after PPPs have been applied, any feasible mitigation measures to reduce or avoid potentially significant impacts must be included. Mitigation measures must be feasible to be enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would reduce but not avoid impacts, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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3.17 TRANSPORTATION

Project-related transportation and safety impacts are addressed in this section. Other environmental impacts associated with project-related transportation infrastructure improvements (e.g., air quality, greenhouse gas emissions, and noise) are addressed in the applicable sections of this City of Irvine CEQA Guidelines manual that pertain to such issues.

In accordance with the Office of Planning Research (OPR), vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and nonmotorized travel. Except as provided in subdivision 15064.3(b)(2) of the CEQA Guidelines, regarding roadway capacity, a project's effect on automobile delay cannot constitute a significant environmental impact.

3.17.1 Background

The City of Irvine comprises five different systems of transportation and circulation: air, roadways, rail, public transit, and trails.

Air System

The air system consists of general aviation and commercial flights from John Wayne Airport. Most of the air transportation needs for Orange County are met by this airport. The flight schedules of local airlines are regulated by the County to minimize air and noise pollution impacts on businesses and residents.

Roadway System

The City's arterial roadway system is shown in the General Plan Circulation Element. The Circulation Element illustrates the designations for roadways in the City and county, which are listed below, and describes them in detail.

- Freeway
- Transportation Corridor
- Expressway
- Major Highway (8- or 6-lane)
- Primary Highway
- Secondary Highway
- Commuter Highway

The Circulation Element also designates the operational characteristics of roadways in the City and describes them in detail. These classifications are listed below.

- Freeway
- Transportation Corridor
- Expressway
- Thruway
- Parkway
- Community Collector

- Local Street

The City of Irvine is served by a circulation system that includes regional and local facilities, including: Interstate 5 (I-5) and I-405; State Route 241 (SR-241), also referred to as the Foothill Transportation Corridor; SR-261 and SR-133, both part of the Eastern Transportation Corridor; and various local roadways and arterials.

Rail System

The City of Irvine is currently served by rail transit at the Irvine Station off Barranca Parkway. The Tustin Metrolink Station, located on Edinger Avenue in the City of Tustin, also provides connections to the City of Irvine. Several Metrolink trains serve both stations daily, and Amtrak service is also provided at the Irvine Station. In 2005, the Orange County Transportation Authority's (OCTA) board of directors approved the Metrolink Service Expansion Program (MSEP) to provide more frequent train service between Fullerton and Laguna Niguel/Mission Viejo. OC Go (also known as Measure M) is a 30-year half-cent tax for transportation improvements through 2041 (OCTA 2020). Increased weekday service under the MSEP was launched in summer 2011 and improves services at both the Irvine and Tustin Metrolink Stations.

Public Transit System

The public transportation system is designed to serve regional and local travel needs. Interstate bus systems operate primarily along I-5 and I-405, with most having no stops in the City of Irvine. OCTA provides bus service to major destinations within the City and surrounding communities.

OCTA operates a hierarchy of transit routes, ranging from regional routes used by commuters to local riders using community shuttles.

- Local Route. Local routes designed to travel primarily within Irvine or nearby cities. Headways are typically one hour.

- Community and Shuttle Route. These routes are intended to connect select locations in Irvine to other cities. Headways are typically an hour.

- Intracounty Express. Regional routes offering express service along freeways, have fewer stops and operate only during peak hours.

- Station Link Routes. These routes are designed to link specifically with transit stations and serve nearby employment centers.

- Access Routes. Door-to-door service for residents unable to use the regular fixed route service due to functional limitations caused by a disability.

In 2016, OCTA and the City of Irvine adopted an agreement transferring the operation and maintenance of Irvine's I-shuttle program to OCTA. The *i*Shuttle is a clean fuel, rubber-tire shuttle bus that operates within the City. The *i*Shuttle network consists of six routes:

- **Route 400A:** Operates between Tustin Station to John Wayne Airport. The service operates weekdays from approximately 5:30 am to 8:50 am and 3:10 pm to 6:30 pm (northbound) and 6:10 am to 9:20 am and 3:50 pm to 7:15 pm (southbound) with roughly 13- to 50-minute headways.

- **Route 401B:** Connects Tustin Station and Irvine Business Center. The service operates weekdays from approximately 6:45 am to 8:50 am and 3:10 pm to 7:20 pm (northbound) and 6:10 am to 9:25 am and 2:40 pm to 7:50 pm (southbound) with roughly 13- to 45-minute headways.

- **Route 402C:** Connects Irvine Station with Capital Group and Valley Oak. The service operates weekdays from approximately 3:10 pm to 6:30 pm (eastbound) and 6:10 am to 9:20 am (westbound) with roughly 7- to 27-minute headways.

- **Route 403D:** Connects Irvine Station with Sand Canyon and Waterworks. The service operates weekdays from approximately 6:30 am to 9:50 am and 3:05 pm to 6:35 pm (eastbound) and 6:05 am to 10:00 am and 3:30 pm to 6:25 pm (westbound) at roughly 8- to 27-minute intervals.

- **Route 404E:** Connects Irvine Station and locations to the east and south of the station in the Irvine Spectrum area. The service operates weekdays from approximately 6:30 am to 9:00 am and 3:00 pm to 6:30 pm (northbound) and 6:05 am to 9:30 am and 3:25 pm to 5:55 pm (southbound) at roughly 11- to 25-minute headways.

- **Route 405F:** Connects Tustin Station and the west side of the Irvine Business Center. The service operates in a loop from approximately 6:10 am to 9:30 am and 3:00 pm to 6:30 pm (counter-clockwise) with roughly 10- to 50-minute headways.

Metrolink and OCTA Pass holders ride the shuttle for free. Other commuters are charged one-dollar fares. There is no weekend service for any of these routes. Refer to Metrolink, OCTA, and iShuttle websites for schedules and service routes.

Bicycle Trails

There is an extensive network of trails that connect to destinations within the City of Irvine, as shown in the City's General Plan Circulation Element. On-street bicycle lanes have been developed along the majority of designated arterial roadways, and off-street bike trails have been developed to connect to various areas of the City and to trail systems beyond the City's limits. Within the City, there are approximately 65 miles of off-street bikeways and 307 miles of on-street bike lanes. The Orange County Commuter Bikeways Strategic Plan, OC Active Orange County's Bike and Pedestrian Plan (2018), the City of Irvine Bicycle Transportation Plan (2011), Active Transportation Plan (2015), Citywide Bicycle, Pedestrian, and Motorist Safety Program, and the City of Irvine Circulation Element all address bicycle networks in the City.

In addition to the designated trails, the City has developed a comprehensive system of curb-adjacent and parkway-separated sidewalks. The comprehensive system of trails and sidewalks provides recreational and commuter opportunities throughout the City.

3.17.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

According to Appendix G of the State CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

d) Result in inadequate emergency access.

3.17.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines.

General Approach

The City of Irvine has adopted guidelines for evaluating traffic impacts pursuant to SB 743. Appendix I of the City of Irvine CEQA Manual is the City's "VMT Impact Analysis Guidelines".

Step 1: Determine the Existing Conditions

The existing conditions section should include a discussion of whether the existing site generates VMT. Existing VMT conditions are established by the City's VMT traffic model (ITAM TransCAD 2018 VMT or more recent version based on technical updates to the model).

Step 2: Project Impacts

Screening criteria for traffic are based on standards adopted by the City of Irvine. The following screening criteria provide assistance in responding to the City's initial study checklist questions and can help determine if further study is needed for determining significant impacts. CEQA screening criteria are not bright-line thresholds that indicate significant impacts; rather, they help determine when impacts would not occur or are *de minimus* so that a detailed analysis is not necessary.

Screening Criteria

Land Use Projects

If the project meets any one of four screening criteria, no further VMT impact analysis is required:

1. The project nets an increase of 250 or fewer weekday daily trips (ITE based).

2. The project is in a high quality transit area (i.e., within a half mile of an existing rail transit station or of two or more existing bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hours) except when the project:

    - Has a Floor Area Ratio (FAR) of less than 0.75

    - Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking)

    - Is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization

- Replaces affordable residential units with a smaller number of moderate- or high-income residential units;

3. The project is a 100 percent restricted affordable housing units.[1]

4. The project is locally serving—such as 100,000 square feet or less retail, daycare use, or a K-12 public school.

Full VMT Analysis

If a project does not meet the screening criteria, a full VMT analysis of the project residential and/or nonresidential VMT is required. The project's resulting VMT rate must be evaluated and compared against the applicable adopted VMT rate threshold using the City's VMT traffic model (ITAM TransCAD 2018 VMT). For mixed use projects, this calculation is done separately for the residential component and non-residential component.

- For residential development projects, the VMT per capita (VMT/capita) specific to a project is calculated by the project's change in the countywide population VMT divided by the resulting change in the countywide population caused by the project.

- For nonresidential projects, the VMT per employee (VMT/employee) is calculated by dividing the change in the project's countywide commute and other (i.e., client, customer) VMT divided by the resulting change in the number of countywide employees caused by a project.

Significance Criteria

The methodology to calculate and determine VMT impacts is outlined in the City's "VMT Impact Analysis Guidelines." The City of Irvine's VMT threshold is 15 percent below existing conditions.

Transportation Projects

Appendix I, *VMT Impact Analysis Guidelines*, identifies categories of transportation projects that induce vehicle travel and transportation projects that do not require VMT analysis (as outlined in the OPR Technical Advisory). Transportation projects that are on the identified list do not require a VMT analysis.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and preclude the need for additional analysis. This must be substantiated in the environmental analysis.

[1] If less than 100 percent, the portion of the project that consists of restricted affordable units is not subject to VMT impact analysis. "Restricted" for VMT analysis purposes shall mean having a recorded instrument against the property that defines affordability terms.

TRANSPORTATION

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, that impact is potentially significant. In some cases, an impact may not be significant if it is consistent with the general plan, the City's vision for the area, or other existing plans or guidelines for the project site. Significance conclusions must be substantiated in the analysis.

Step 5: Formulate Mitigation

For transportation impacts, mitigation measures are usually based on the technical analysis. Appendix I lists sample mitigation measures for traffic impacts.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.18 TRIBAL CULTURAL RESOURCES

3.18.1 Background

Assembly Bill 52 Tribal Consultation

California Assembly Bill (AB) 52 (Gatto) specifies that a project that causes a substantial adverse change in the significance of a tribal cultural resources may have a significant effect on the environment. AB 52 requires that a lead agency consult with California Native American tribes that are traditionally and culturally affiliated with geographic areas and that request notification. AB 52 applies to projects that have a notice of preparation or a notice of negative declaration or mitigated negative declaration on or after July 1, 2015. This bill also requires the separate consideration of tribal cultural resources in the CEQA thresholds.

AB 52 Consultation Process

- Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to California Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed project and have requested of the lead agency, in writing, to be informed of projects.

- Such California Native American tribes have 30 days after receipt of formal notification to request consultation. If consultation is requested, the lead agency must begin the consultation process within 30 days of receiving the request for consultation and prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for the project.

Any project within the City of Irvine that requires a notice of preparation, mitigated negative declaration, or negative declaration requires AB 52 consultation.

Senate Bill 18 Tribal Consultation

California Senate Bill (SB) 18 (Burton, D-San Francisco) helps tribes and jurisdictions define resources and sacred areas and incorporates protection of these places into the general plan process. It is the first law in the nation to mandate tribal consultation at the local level. SB 18 consultation applies to the adoption and amendment of general plans proposed on or after March 1, 2005. SB 18 consultation is a "government to government" interaction between tribal representatives and representatives of the local jurisdiction.

SB 18 Consultation Process

- Once a local government initiates a proposal to adopt or amend a General Plan, the local government must send a written request to the Native American Heritage Commission (NAHC) asking for a list of tribes to consult.
  - Requests should clearly state that the local government is seeking information about tribes that are on the "SB 18 Tribal Consultation List."

- The NAHC is mandated to provide local governments with a written contact list of tribes in the local government's jurisdiction in 30 days.

Since the majority of development in the City of Irvine is within an existing planning area, few development proposals would require SB 18 consultation. However, a project that requires a general plan amendment would trigger SB 18 consultation.

3.18.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for tribal cultural resource impacts. A project would normally have a significant effect on the environment if the project would:

a) 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:

   i. 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

   ii. 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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

3.18.3 Determining Significance

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The tribal cultural resources analysis should look at the questions in Section 1.2. Additional questions that pertain specifically to tribal cultural resources are provided for each step of the "General Approach for Environmental Analysis" flow chart.

Step 1: Determine the Existing Conditions

The existing setting section of cultural resources analysis should include a description of any known tribal cultural resources on or near the project site. It should also provide a brief history of the site and area, including a description of any previous cultural studies that have been completed on or near the site. The following questions are meant to help focus the existing setting discussion for cultural resources.

- Is the proposed project on or near a site that contains tribal cultural resources, as defined by PRC § 21074 or identified through consultation with a California Native American tribe?

- What cultural studies have been previously been completed for the project site or the surrounding area? Consult the environmental documentation and supporting cultural resource studies (if available) that have been completed for the planning area in which the project site is located.

Step 2: Project Impacts

Once a project description has been established for a proposed project, the potential for impacts to tribal cultural resources to occur can be determined. The potential for impacts is based on the following questions, provided to supplement the questions under Step 2 of the "General Approach for Determining Significance Flow Chart" in Chapter 1.

- If the site has tribal cultural resources as identified previously, would the proposed project involve ground disturbance that affects these resources?

- Does the proposed project require the disturbance of a tribal cultural resource?

Step 3: Apply Plans, Policies, and Programs

The City requires a paleontologist and/or archaeologist to be on call during ground-disturbing activities when there is potential for resources to be uncovered. The arrangements for the paleontologist and/or archaeologist to be available for consultation must be completed prior to the first preliminary or precise grading permit is issued by the City (Standard Condition 2.5). Further, SB 18 and AB 52 require California Native American consultation. Consult Appendix C for additional PPPs applicable to cultural resources.

Step 4: Determine Impact Significance

If tribal cultural resources are on the project site, the level of significance of the impact to the resource is dependent on:

- The location of the resource in relation to proposed site disturbance.

- The importance of the resource to tribal history.

Typically, when it has been determined that there is a potential for resources to exist onsite, a cultural resources study is prepared, which contains technical analysis of tribal cultural resources. This study can help determine the significance of impacts. Also, any CEQA documents and cultural reports that currently exist for the planning area in which the project is located can also help determine the level of significance for an impact to a tribal cultural resource.

Step 5: Formulate Mitigation

Mitigation measures to reduce tribal cultural resource impacts either require the removal of the tribal cultural resource from the project site; when possible, complete avoidance of the resource; or documentation of the tribal cultural resource. The course of action depends on consultation with a tribal representative pursuant to AB 52 and SB 18. Although not included as a mitigation measure, during construction, an archaeologist must always be on call, as required by the City (Standard Condition 2.5).

TRIBAL CULTURAL RESOURCES

Step 6: Determine Significance after Mitigation

As described in the flow chart in Chapter 1, a determination of project impacts should be made after all mitigation measures, PPPs, Standard Conditions of Approval, and other restrictions and regulations have been implemented. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.19 UTILITIES AND SERVICE SYSTEMS

Utility and service system providers are typically a combination of City, quasi-public agencies, and privately owned companies and corporations.

3.19.1 Background

Following is a description of the various utility and service systems and providers that serve the City of Irvine.

Water

The Irvine Ranch Water District (IRWD) is the water purveyor for the City of Irvine. It is a multiservice jurisdictional agency that provides potable and nonpotable water supply and wastewater collection, treatment, and disposal services. IRWD has facilities that include more than 1,500 miles of drinking water pipelines, more than 900 miles of sewer pipes, many reservoirs, and water recycling facilities. IRWD prepares two planning documents to guide water supply decision making:

- **Water Resources Master Plan**, a comprehensive document compiling data and analyses that IRWD considers necessary for its planning needs (primary source for IRWD for water planning)

- **Urban Water Management Plan**, a document required by statute (California Water Code §§ 10631 et seq.)

Table 3.17-1 provides characteristics of the potable and nonpotable water supplies in the City of Irvine.

Table 3.17-1
Potable and Nonpotable Water Supply

Source	*Comments*
Potable Water Supply	
Imported Water	• Purchased through the Metropolitan Water District of Orange County (MWDOC) from the Metropolitan Water District of Southern California (MWD) • All imported water goes through the MWD Diemer Filtration Plant
Groundwater	• Orange County Groundwater Basin and the Irvine and Lake Forest Subbasins
Nonpotable Water Supply	
Imported water	• Purchased through MWDOC from the MWD • Primarily used for agriculture and landscaping
Surface Water from Irvine Lake	• Anticipated to end in Planning Year 2020
Groundwater	• Groundwater pumping
Recycled Water	• Used for agriculture, landscaping, toilets, and other uses not requiring potable water • IRWD maintains an extensive infrastructure system, including a pipeline system that includes more than 500 miles of dual distribution pipelines. • Water is recycled at the Michelson Water Recycling Plant and Los Alisos Water Recycling Plant.

Source: UWMP 2015.

Wastewater

City of Irvine

IRWD's sewer collection system stretches approximately 963 miles. Wastewater in the City of Irvine travels through IRWD's collection system to the Michelson Water Reclamation Plant and Los Alisos Water Recycling Plant, where it is treated for use as recycled water. The entire City is in the jurisdictional area of the Santa Ana Regional Water Quality Control Board (RWQCB).

Irvine Business Complex

There is one portion of the City that is not part of the IRWD wastewater collection system. The IBC is in the Orange County Sanitation District (OCSD), tributary zone No. 7 (SD-7). Wastewater generated in the IBC is served by and currently flows to OCSD, and not to IRWD treatment facilities.

Stormwater

As mentioned under "Wastewater," the City is entirely within the Santa Ana RWQCB jurisdictional area. As part of the State Water Resources Control Board (SWRCB), the Santa Ana RWQCB is the regional board for the Santa Ana River watershed. The watershed and water quality issues are generally discussed in more detail in the Hydrology and Water Quality section of an EIR. However, the Utilities and Service Systems section of an EIR requires a discussion of stormwater drainage and whether the project would comply with water quality permits administered by the Santa Ana RWQCB. Permits that pertain to stormwater include:

- Orange County Municipal Separate Storm Sewer Systems (MS4) Permit (issued by Santa Ana RWQCB)
- General Industrial Activities Storm Water Permit (issued by SWRCB, administered by Santa Ana RWQCB)
- General Construction Activity Storm Water Permit (issued by SWRCB, administered by Santa Ana RWQCB)

Compliance with these permits is required when proposed development meets specified criteria.

- **MS4 Permit**: Any development that meets the criteria in Section XII.B.2 of the Orange County MS4 Permit must demonstrate compliance with the Permit and implement a water quality management plan.
- **General Industrial Activity Permit**: This permit, also referred to as the Industrial General Permit (Order No. 2014-0057-DWQ as amended by Order 2015-0122-DWQ), is generally not addressed in the CEQA document unless the proposed project is one of the industrial facilities covered by the permit (see Attachment A, *Facilities Covered,* of the Industrial General Permit).
- **General Construction Permit**: Demonstration of compliance is required when the proposed project would disturb one acre or more. Compliance must also be demonstrated for a project that disturbs less than one acre but is part of a phased development that disturbs more than one acre. A Stormwater Pollution Prevention Plan must be implemented for construction activities.

The City of Irvine has adopted a local implementation plan that is consistent with the drainage area management plan for the Santa Ana RWQCB.

Solid Waste

Orange County Waste and Recycling (OCWR) is the government agency that owns, regulates, and operates three landfills to serve the solid waste disposal needs of the County. The City of Irvine disposes of the majority of its sold wastes at the Frank R. Bowerman Landfill in Irvine. The anticipated closure date of this facility is 2053. OCWR is in the process of establishing the Bee Canyon Greenery Composting Operation.

In addition to landfills, OCWR is also responsible for a variety of other solid waste facilities, including:

- Operating six transfer/materials recovery facilities
- Managing four household hazardous waste collection centers
- Administering waste collection and recycling operations in unincorporated areas of the county
- Maintaining two closed landfills
- Monitoring former disposal facilities

The City, through Waste Management of Orange County, provides a comprehensive curbside recycling program for glass, household paper products, aluminum and other metals, and greenwaste.

Waste Diversion

In 1989, the State Legislature passed Assembly Bill 939 (AB 939), the Integrated Waste Management Act, which required cities and county to prepare, adopt, and submit a "source reduction and recycling element" to the County that characterizes waste disposal, source reduction, recycling, composting, solid waste capacity, education/public information, funding, special waste, and household hazardous waste in order to ensure sufficient solid waste disposal capacity. In addition, AB 939 mandated that by January 1, 2000, each city achieve a waste diversion goal of 50 percent through source reduction, recycling, and composting activities. In October 2011, the Legislature passed AB 341, which increased the goal of diversion of waste from landfills from 50 percent to 75 percent by 2020. In addition, AB 341 requires mandatory commercial waste recycling.

Further, AB 1826 requires that businesses and multifamily residences of five or more units that generate a specified amount of organic waste to arrange recycling services for organic waste,

Irvine Zero Waste Resolution

The City of Irvine adopted a resolution to support Zero Waste principles on July 10, 2007. The City encourages many Zero Waste practices through residential curbside recycling, parks recycling (where City parks are equipped with special recycling receptacles for public use), recycling at City facilities, and the City's purchasing policy to buy recycled products when feasible. In addition, all City environmental programs' public education materials include the State's adopted Slogan: "Zero Waste, You Make It Happen."

Irvine Construction and Demolition Debris Recycling Ordinance

In 2007 the City of Irvine adopted a Construction and Demolition Debris Recycling Ordinance (07-18). Under this ordinance, projects are required to recycle or reuse 75 percent of concrete and asphalt, and at

least 65 percent of all debris generated. Covered projects include new residential and nonresidential development and most projects involving nonresidential demolition and/or renovation in accordance with requirements of the California Green Building Standards Code. Applicants for projects are required to submit a waste management plan to the City prior to obtaining permits for construction, demolition, or renovation activities covered by the ordinance.

Irvine Sustainability Community Initiative

The Irvine Sustainable Community Initiative (Initiative Ordinance 10-11) was adopted as Initiative Measure S in 2010. The ordinance was adopted to ratify and implement policies in support of renewable energy and environmental programs for a sustainable community. It outlines the City's direction for continuing to develop and implement programs geared toward green building, renewable energy, and sustainability. For example, the City would continue to develop and implement recycling, zero waste, or other innovative onsite business programs to divert waste from landfills and also continue to develop and implement the use of native, California-friendly, and drought-tolerant landscaping.

General Plan Integrated Waste Management Element

The City's existing general plan contains a chapter on integrated waste management. The goal of the element is to encourage solid waste reduction and provide for the efficient recycling and disposal of refuse and solid waste material without deteriorating the environment.

3.19.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for utilities and service systems. Thus, an initial study should consider whether a project will:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

c. Result in a determination by the waste water treatment provider, which serves or may serve the project that it adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

3.19.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines. The general approach for environmental analysis is provided, followed by a more detailed narrative for each of the checklist thresholds discussed in this section.

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for utilities and service systems should look at the questions in this flow chart. Additional questions that pertain specifically to each subcategory of utilities and service systems (e.g., water, stormwater, wastewater, and solid waste) are provided in this section for each step of the "General Approach for Environmental Analysis" flow chart.

Step 1: Determine the Existing Conditions

Potable and Nonpotable Water and Wastewater

The existing water conditions must take into account where water comes from, how it gets to its destination, how much water is available for use, and where it goes after it is used.

- What are the water supply sources and water collection, distribution, and treatment systems that would be used by the project?
- Is there infrastructure on or adjacent to the site? For potable and nonpotable water?
- Where does wastewater go once it leaves the site?

Solid Waste

The existing conditions section for waste should identify the primary landfills where municipal solid waste associated with the project would go.

Step 2: Project Impacts

In addition to the questions listed in the "General Approach to Environmental Analysis" in Chapter 1, the following questions can also be used to determine project impacts.

Potable and Nonpotable Water (Thresholds a and b)

- What is the total water demand of the proposed project?
- Would the project have a demand for nonpotable/recycled water?
- Do the proposed land uses demand a greater amount of water than the existing condition?
- Does the proposed project include any water efficiency design features—drip irrigation, low flow toilets, high efficiency water fixtures, etc.?

Wastewater (Thresholds a and c)

- How much wastewater would be generated by the proposed project?
- Would the water go to the Michelson Water Reclamation Plant or the Los Alisos Water Recycling Plant? If not, where would it go?

- Would the project's water exceed the existing daily treatment capacity of the wastewater treatment plant?

- Are there any project design features that would reduce or offset the wastewater generated by the project?

Stormwater (Threshold a)

- Does the project alter the existing drainage patterns on the project site or increase the amount of stormwater runoff?

- Does the project involve development that would require demonstration of compliance with the Orange County MS4 permit, General Industrial Activity Permit, or General Construction Permit?

- Is an urban water management plan or Stormwater Pollution Prevention Plan required?

Solid Waste (Threshold d and e)

- How much waste would the proposed project generate (during project operation and construction)? Typically, the EIRs prepared for the City of Irvine use the solid waste generation rates from the California Department of Resources Recycling and Recovery (CalRecycle). These rates are found on the CalRecycle website and are based on land use type.

- Would the project generate a daily or yearly solid waste yield that, in combination with existing and future daily or yearly yields, would cause the capacity of local landfills to be exceeded?

- Would the project require the addition of a new solid waste collection route or other major improvements?

- Are there any construction or operational-related design measures, such as recycling programs and other waste diversion features, which would reduce the amount typically expected for the type of project proposed?

- Would the project support the City's State-mandated waste reduction goals and/or whether the project would meet specific waste diversion targets?

Step 3: Apply Plans, Policies, and Programs

Water

IRWD

The project site may be in an area that is capable of receiving service from the IRWD's recycled water system. This area is shown in the Water Resource Master Plan, Sewer Master Plan, Natural Treatment System Master Plan, and addenda. If IRWD determines recycled water service is feasible, the project site must include both potable and nonpotable water supply systems. This is a local requirement enforced by IRWD.

The IRWD also requires fire flow analyses and connection fees to offset the fair share cost of a proposed project.

City of Irvine

Pursuant to Irvine Municipal Code Section 5-9-101, the construction and buildings are subject to the California Building Code and California Green Building Code Standards (2016 with errata) as amended by the Irvine Municipal Code.

State

A water supply assessment must be prepared for the project if it meets the criteria identified in SB 610, and adequate water supply must be verified for subdivisions that meet the criteria identified in SB 221. More information on these two bills is given in Appendix F, *Regulatory Information*.

Wastewater

See IRWD's requirements for determining recycled water use and connection fees.

Stormwater

The proposed project must be compliant with stormwater permits of the Santa Ana RWQCB.

Solid Waste

Is the proposed project subject to:

- Any of the City's code restrictions, policies, or plans, including:
    - Standard Condition 2.24 or Standard Condition 3.7, requiring compliance with Title 6, Division 7 of the City's Municipal Code?
    - The Construction and Demolition (C&D) Debris Recycling and Reuse Ordinance?
    - The Zero Waste Program?

- The State's requirement that 75 percent of landfill waste be diverted by 2020 (AB 341)?

Step 4: Determine Impact Significance

Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, the impact is potentially significant. For most utilities categories, an impact is significant when the proposed project would require constructing new facilities or acquiring new equipment or resources that are not already funded through the City's Capital Improvements Program. For water supply, a project would have a significant impact if the proposed project would require more water than what is currently projected for the project site or available to IRWD.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures are meant to relate directly to the project impact and must be feasible to be enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure.

Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

3.20 WILDFIRE

The following is a description of wildfire hazards in the City of Irvine.

3.20.1 Background

Wildfire potential is influenced by:

- Fire history: How frequently areas have burned in the past.
- Fuel: Forest, woodland, scrub, grassland.
- Terrain: Fires spread more quickly upslope.
- Typical weather patterns: Santa Ana winds, hot/dry weather.

Fire hazard severity zones (FHSZ) are divided between federal responsibility areas (FRA), state responsibility areas (SRA), and local responsibility areas (LRA), as shown in Figure 3.20-1, *Fire Hazards*. There are no federal responsibility areas in Irvine. SRAs map moderate, high, and very high FHSZs. LRAs designate very high FHSZs.

The building code requirements for fire prevention are more stringent in very high FHSZs.

3.20.2 Initial Study Checklist: Appendix G of the CEQA Guidelines

The City has adopted Appendix G of the State CEQA Guidelines as the significance thresholds for wildfire. A project would normally have a significant effect on the environment if located in or near state responsibility areas or lands classified as very high fire hazard severity zones if the project would:

a. Substantially impair an adopted emergency response plan or emergency evacuation plan.

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.20.3 Determining Significance

The following guidelines for determining significance are based on the Initial Study Checklist questions of Appendix G of the State CEQA Guidelines. The general approach for environmental analysis is provided, followed by a more detailed narrative for each of the checklist thresholds discussed in this section.

WILDFIRE

General Approach

The steps below are based on the "General Approach for Environmental Analysis" flow chart in Chapter 1, Figure 1-1, of this manual. The environmental analysis for the wildfire analysis should look at the questions provided in Section 1.2. Additional questions that pertain specifically to wildfire are provided in this section for each step of the flow chart.

Step 1: Determine the Existing Conditions

The existing setting section should document wildfire hazards in the area:

- If the site is within a wildland fire area, identified as a high or very high FHSZ on the SRA or LRA maps or in the City's General Plan, or within the wildland urban interface (WUI).
- Historical fires in the project vicinity.
- Building codes related to fire.
- Presence of emergency response plans and/or emergency evacuation plans.
- Project site characteristics that may affect fire (e.g., vegetation/fuel type, slope, and prevailing winds).

Step 2: Project Impacts

If the project is within a high fire severity zone or within the WUI, the wildfire impact analysis should consider the project design and building materials; conditions required based on review of the project by the Orange County Fire Authority; potential fire risk reduction measures; and whether or not the project includes infrastructure that may exacerbate wildfire risks.

Step 3: Apply Plans, Policies, and Programs

The City of Irvine lists the PPPs in each topical section of an EIR, usually preceding or at the start of the impact analysis section. The PPPs include local, state, and federal regulations, including the City's Standard Conditions of Approval. PPPs may reduce the level of impact significance and would preclude the need for additional analysis. This must be substantiated in the environmental analysis.

Step 4: Determine Impact Significance

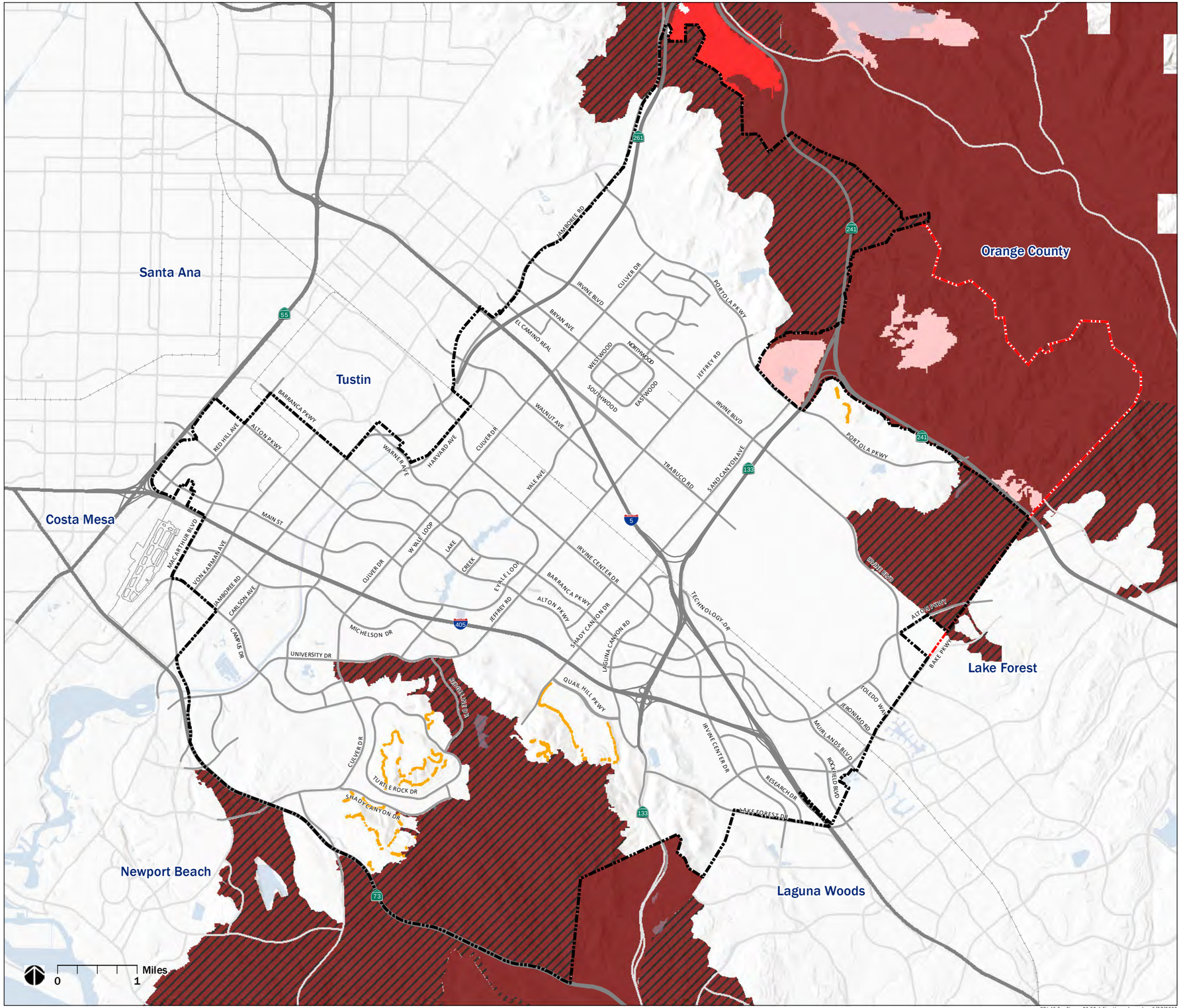
Once it has been determined that a project impact exceeds the significance criteria and existing PPPs do not sufficiently reduce the significance, the impact is potentially significant.

Step 5: Formulate Mitigation

Mitigation measures to reduce potentially significant impacts are created after it has been substantiated that an impact is significant. Mitigation measures are meant to relate directly to the project impact and must be feasible to be enforced and implemented by the project applicant, lead agency, or another responsible agency. A nexus must be demonstrated between the project impact and the proposed mitigation measure.

Figure 3.20-1

FIRE HAZARDS



COI-45.0 : Figure 03.20-1 Fire Hazards.mxd 3/27/2020

LEGEND

LOCAL RESPONSIBILITY AREA
- City-adopted Very High Fire Severity Zone
- City-adopted 100-foot buffer zone

STATE RESPONSIBILITY AREA
- OCFA-adopted Very High Fire Severity Zone
- OCFA-adopted High Fire Severity Zone
- OCFA-adopted Moderate Fire Hazard Severity Zone
- City Boundary
- Sphere of Influence

Notes:
100 Foot Buffer Zone is that area on private property within 100 feet of a fuel modification or open space area containing native or hazardous vegetation, and which is designated on the currently adopted Wildland Fire Hazard Map for the City of Irvine.

Data from Orange County Fire Authority.

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Step 6: Determine Significance After Mitigation

After the implementation of all mitigation and existing regulations, the resulting level of significance must be determined and stated. If there are no feasible mitigation measures, or mitigation measures would not reduce impacts to a level of insignificance, the remaining impacts are significant and unavoidable. If significant and unavoidable impacts remain, the City will be required to adopt a statement of overriding considerations if it chooses to approve a project despite such significant and unavoidable impacts.

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