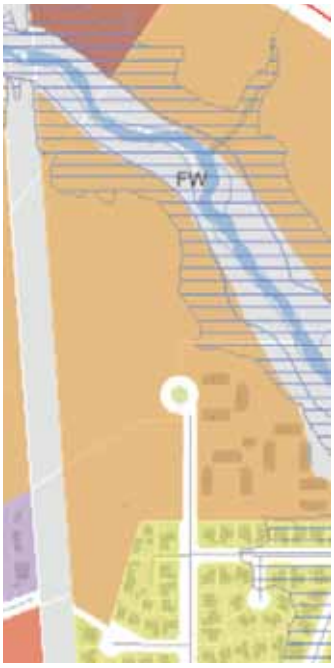
Sid Commons Apartment Project



Draft Environmental Impact Report

SCH # 2007072041
Lead Agency: City of Petaluma
January, 2018

Prepared for:
City of Petaluma Planning Division
11 English Street
Petaluma, CA

Prepared by:

LAMPHIER-GREGORY

Sid Commons Apartment Project
Draft EIR

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Introduction

Project Summary

This Draft Environmental Impact Report (Draft EIR, or DEIR) evaluates the potential environmental impacts associated with development of the proposed Sid Commons Apartments Project, located in the City of Petaluma at the northern terminus of Graylawn Avenue, northwest of the existing Oak Creek Apartments. The Project applicant is J. Cyril Johnson Investment Corp., and the Lead Agency for this EIR is the City of Petaluma. The Project applicant is seeking to rezone the property and to amend prior Planned Unit District (PUD) restrictions to allow for development of a 278-unit apartment complex, a one-story community clubhouse and a swimming pool, all located on the approximately 15.45-acre net developable portion of the Project site.

Purpose of the Environmental Impact Report

This Environmental Impact Report (EIR) has been prepared by the City of Petaluma in compliance with the provisions of the California Environmental Quality Act (CEQA), pursuant to California Public Resources Code §21000 et seq., and the CEQA Guidelines found in California Code of Regulations Title 14, §15000 et seq. The City of Petaluma is the lead agency responsible for conducting the environmental review before deciding whether to approve the Project.

CEQA Guidelines require an EIR to be prepared for any project that may have a significant impact on the environment. An EIR is an informational document intended to "… provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project."

This EIR is intended as an informational document to inform City of Petaluma decision-makers, other responsible public agencies and the public of the potentially significant environmental impacts of the Project, identify possible ways to minimize those significant impacts, and to analyze reasonable alternatives to the Project. CEQA requires that public agencies not approve projects until all feasible means available have been employed to substantially lessen the project's significant environmental effects. Before any discretionary approvals may be granted for the proposed Project, the City of Petaluma must certify the EIR as adequate, accurate, and objective. This EIR does not control the City of Petaluma's discretion on the Project. However, as required under CEQA, the agency must respond to each significant impact identified in this EIR by making findings and, if necessary, by making a statement of overriding consideration.

EIR Review Process

Notice of Preparation and Initial Study

In July 2007, the City of Petaluma distributed a Notice of Preparation of an EIR ("NOP") for the Project. The NOP solicited comments from public agencies and the general public regarding the scope of the EIR. Publication of the NOP initiated a 30-day public review and comment period that began on July 11, 2007 and ended on August 9, 2007. A public scoping meeting on the EIR was held on July 25, 2007 to gather oral comments. The NOP and all comments submitted in response are presented in **Appendix A**. The Planning Department, in preparing this Draft EIR, has considered the public's comments, including the selection of Project alternatives.

The 2007 Initial Study prepared for the Project identified those environmental issues associated with the proposed Project that were determined to be less than significant, and focused this EIR on those impacts determined to be potentially significant. Project-related impacts to the following CEQA topics were determined not to be significant, and no additional analysis is included in this DEIR:

- agricultural resources,
- mineral resources,
- population and housing, and
- public services and recreation

For analysis of these topics, please refer to chapter 17 of this Draft EIR and the Initial Study included in Appendix A.

Following preparation of the Initial Study, work on the Draft EIR commenced, but work was temporarily halted during periods when several larger citywide planning processes were underway. These processes included the preparation of the City of Petaluma General Plan 2025 (completed in 2008) and preparation of the Rainier Cross Town Connector project and its associated Draft EIR (released in July 2014), as well as on-going efforts to resolve access constraints to the Project site arising from the Project's proposed rail crossing of the SMART rail line. Processing of the proposed Project now continues to move forward with preparation of this Draft EIR.

Draft EIR

In preparing this Draft EIR, the City of Petaluma has considered the comments of other public agencies and the public, including those comments suggesting various Project alternatives. The information contained in this EIR is intended to be objective and impartial, and to enable the reader to arrive at an independent judgment regarding the significance of the environmental impacts resulting from the proposed Project.

The public comment period for this Draft EIR is as indicated on the Notice of Completion and Notice of Availability of a Draft EIR as enclosed under the front cover of this document. During the 45-day review period, interested individuals, organizations and agencies may offer their comments on the adequacy and accuracy of the Draft EIR's evaluation of Project impacts and alternatives. Comments should be submitted in writing during this review period to:

Tiffany Robbe, Senior Planner
City of Petaluma Planning Division
11 English Street
Petaluma, CA 94952-2610

Written comments may also be submitted to Ms. Robbe via email, at TRobbe@ci.petaluma.ca.us. Please include "Sid Commons Draft EIR" in the subject line.

In reviewing the Draft EIR, readers should focus on the sufficiency of the document in identifying and analyzing potential environmental impacts associated with the Project. Readers are also encouraged to review and comment on ways in which significant environmental impacts associated with this Project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate significant environmental impacts. Reviewers should explain the basis for their comments and, whenever possible, should submit data or references in support of their comments.

Final EIR

The comments received during this public review period will be compiled and presented together with responses to those comments in the Final EIR. The City of Petaluma Planning Commission and the City Council will review the EIR documents and will determine whether the EIR provides a full and adequate appraisal of the environmental effects of the Project and its alternatives. Together, this Draft EIR and the Final EIR will constitute the EIR for the Project.

After reviewing this Draft EIR and the Final EIR, and after reviewing the recommendation of the City of Petaluma Planning Commission regarding the certification of the EIR as adequate and complete, the City Council will be in a position to determine whether or not the EIR should be certified, and whether the Project as currently proposed should be approved, revised, or rejected. This determination will be based upon information presented within the entirety of the Project, its impacts and probable consequences, and the possible alternatives and mitigation measures available.

Content and Organization of the EIR

Following this brief introduction to the DEIR, the document's ensuing chapters include the following:

- Chapter 2: Executive Summary and Impact Overview
- Chapter 3: Project Description, presents details about the Project, and identifies the approvals required for implementation.
- Chapter 4: Aesthetics
- Chapter 5: Air Quality
- Chapter 6: Biological Resources
- Chapter 7: Cultural Resources
- Chapter 8: Geology and Soils
- Chapter 9: Greenhouse Gas Emissions and Climate Change
- Chapter 10: Hazards and Hazardous Materials
- Chapter 11: Hydrology and Water Quality
- Chapter 12: Land Use and Planning
- Chapter 13: Noise
- Chapter 14: Transportation and Circulation
- Chapter 15: Utilities and Service Systems
- Chapter 16: Energy

- Chapter 17: Other Less than Significant Effects (Agricultural resources, Hazards related to airport hazards and wildland fires, Mineral resources, Population and housing, and Public services and Recreation)
- Chapter 18: Alternatives, presents and analyzes a range of alternatives to the Project and a comparison of the environmental effects that may be associated with each alternative.
- Chapter 19: Other CEQA Considerations
- Chapter 20: References and EIR Preparers
- Appendices

In Chapters 4 through 16, each of these environmental topic chapters includes a discussion of the existing environmental setting, regulatory framework, the approach to analysis, Project-specific and cumulative impacts, and mitigation measures.

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Executive Summary

Project Overview

This Draft Environmental Impact Report (Draft EIR - or DEIR) evaluates the potential environmental impacts associated with development of the proposed Sid Commons Apartments Project, located in the City of Petaluma at the northern terminus of Graylawn Avenue, northwest of the existing Oak Creek Apartments. The Project applicant is J. Cyril Johnson Investment Corp., and the Lead Agency for this EIR is the City of Petaluma. The Project applicant is seeking to rezone the property and to amend prior Planned Unit District (PUD) restrictions to allow for development of a 278-unit apartment complex on the approximately 15.45-acre net developable portion of the Project site.

Summary of Impacts and Mitigation Measures

The following **Table 2-1: Summary of Impacts and Mitigation Measures** provides a summary of potential environmental impacts, recommended mitigation measures (as necessary), and the resulting level of significance after implementation of all mitigation measures. For a more complete discussion of potential environmental impacts and mitigation measures, please refer to specific discussions in individual chapters of this Draft EIR.

Significant and Unavoidable Impacts

Based on the analysis presented in this EIR, the Project would result in the following environmental impacts that would be considered significant and unavoidable:

- **Haz-6:** The Project would result in increased hazards associated with at-grade rail crossings, including traffic, bicycle and pedestrian crossings at a potentially unsafe location, and increased presence along the rail racks. Construction of a grade separated structure with a design that could be supported by the CPUC and the City of Petaluma (as indicated in Mitigation Measure Haz-6) may not be feasible. As such, this impact is considered a significant and unavoidable impact of the Project as proposed.

- **Noise-3**: The proposed Project would expose new residents to reasonably foreseeable future train horn noise levels from trains crossing the existing Payran crossing, and would expose existing and new residents to reasonably foreseeable future train horn noise levels from trains crossing the proposed Shasta crossing. These noise levels would be a substantial periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project, and that would result in substantial speech interference. Neither the Project applicant nor the City of Petaluma can ensure that a Quiet Zone (as recommended pursuant to Mitigation Measure Noise-3) could be established at this crossing. Even with establishment of a Quiet Zone, noise from additional wayside horns at the Shasta crossing would adversely affect homes (both new Project residences and existing residences).

- **Noise-4:** Construction of the proposed Project would result in temporary or periodically significant noise impacts, especially where grading and construction activities are to be conducted in close proximity to existing and new sensitive receptors, specifically including the existing Oak Creek Apartments and neighbors along Bernice Court, Graylawn Avenue and Jesse Avenue.
- **Transp-7**: The Project would substantially increase roadway hazards and hazards for emergency vehicles accessing the Project site, due to the proposed at-grade rail crossing. Because of the uncertainties associated with construction of a grade separated bridge (as recommended in Mitigation Measure Trans-7A) and because the decision to construct a bridge is not within the jurisdiction of the City of Petaluma alone (i.e., it specifically requires CPUC approval), implementation of this measure cannot be assured. Safety impacts would not be fully avoided with implementation of all at-grade safety measures as recommended in Mitigation Measure Trans-7B, and the City of Petaluma alone does not have the jurisdiction or ability to implement this measure (e.g., CPUC approval is required). Under the scenario, whereby no Shasta Avenue Extension across the rail tracks were provided, Graylawn would provide the only primary means of access and this would conflict with the City's design standards for a local Residential Road.
- **Transp-9**: The Project would create an inconsistency with adopted bicycle and pedestrian system plans, guidelines, policies and standards of the City of Petaluma. Because of the uncertainties associated with a grade separated pedestrian bridge (as recommended in Mitigation Measure Trans-9A), and because the decision to construct a bridge is not within the jurisdiction of the City of Petaluma alone (i.e., it specifically requires CPUC approval), implementation of MM Transp-9A cannot be assured. Even with all applicable and appropriate safety measures as recommended in Mitigation Measure Trans-9B, the decision as to whether an at-grade pedestrian or bicycle crossing could be implemented rests with the CPUC. Since the City of Petaluma does not have the jurisdiction or ability to implement MM Transp-9B, implementation of this measure cannot be assured. Implementation of additional pedestrian and bicycle improvements at the Payran Street rail crossing (per Mitigation Measure Trans-9C) would further ensure the Project's consistency with the City's Mobility Report goals and policies for pedestrian and bicycle circulation.

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Aesthetics		
Visual-1: The Project would not have a substantial adverse effect on a scenic vista, views of significant landscape features, or landforms as seen from public viewing areas.	None needed.	Less than Significant
Visual-2: The Project would not substantially damage scenic resources, including trees, rock outcroppings and historic buildings within a state scenic highway, but would damage the remnant woodlands, which mark the location of the River and the open field just upland of the woodlands that create the contrast and visual reference of the River by locating apartment buildings within this area.	**Mitigation Measure Visual-2: Implement Mitigation Bio-10A: Preclude Residential Development from intruding into the Petaluma River Plan Corridor.** No portion of the residential component of the Project shall extend into the Petaluma River Plan Corridor (comprised of the Preservation, Restoration, and Buffer management zones of the River Plan; see Corridor mapped at Figure 6-6 - see also discussion and Mitigation Measure Bio-11A). Only River Plan Corridor components shall be allowed with the Corridor including the river trail, terracing and restoration.	Less than Significant
Visual-3: The Project could potentially degrade the existing visual character or quality of the site and its surroundings due to the removal of mature trees and conflict with the River Plan.	**Mitigation Visual-3A: Inclusion in SPAR.** The Site Plan and Architectural Review process shall include evaluation and review of the Project for: a) Creation of a lush landscape plan planned to accommodate significant trees in a manner consistent with the Oak Creek Apartment complex; see also Mitigation Bio-9: Incorporation of Native Plants in Landscaping Plans. b) Adequate setbacks and/or landscaping between existing abutting residential structures in the R2 zoning district (addressed from Graylawn Avenue and Bernice Court). c) Extent of desirability of utilizing a single-loaded street near the River corridor, as the means of ensuring the creation of linear open space corridors with maximum public accessibility, visibility, and opportunities for stewardship pursuant to GP 2-P-8. **Implement Mitigation Bio-10B: RODZ review at SPAR** (see Biology section for details) **Implement Mitigation Bio-11A: Further Preservation of Existing Trees** (see Biology section for details)	Less than Significant
Visual-4: Development of the Project would create a new source of substantial light or glare, which could adversely affect day or nighttime views in the area.	**Mitigation Visual-4: Glare Minimization Design Standards.** The following measures shall be applied to reduce light and glare at the Project site: a) Lighting designs shall employ fixtures that would cast light in a downward direction, and	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	building materials should not be sources of substantial glare. b) Lighting should generally occur at intersections, areas of pedestrian activity, and building entrances, and be minimized elsewhere. c) Ornamental, pedestrian-scale fixtures shall be utilized to the degree possible. Lighting shall be designed to minimize glare and the direct view of light sources. d) No lighting shall blink, flash, or be of unusually high intensity or brightness. e) Lighting shall utilize energy-efficient fixtures which provide a balance between energy efficiency and pleasing light color. f) High pressure sodium fixtures shall be utilized for street lighting. Metal halide, incandescent, or color-balanced fluorescent fixtures may be used for other lighting systems. Low pressure sodium fixtures are prohibited. g) All street lights shall utilize cut-off fixtures to minimize visibility from adjacent areas. h) Parking area lighting fixtures shall be no higher than necessary to provide efficient lighting of the parking areas. i) Landscape lighting fixtures shall be hidden from direct view unless designed as an integral part of the area. j) Landscape lighting sources shall be shielded from view at night, with the emphasis being on the object or view being lit. See also **Mitigation Measure Bio-7A**.	
Air Quality		
AQ-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan.	None needed.	No Impact
AQ-2: The Project could result in air quality impacts related to construction-period fugitive dust (PM10), but these impacts would be reduced with implementation of required mitigation measures as recommended by the BAAQMD.	**Mitigation Measure AQ-2A: Basic Dust Control.** The Project shall comply with the following "Basic" mitigation measures as recommended by BAAQMD for reducing construction related emissions: a) All exposed surfaces (e.g. parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	b) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. c) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. d) All vehicle speeds on unpaved roads shall be limited to 15 mph. e) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. f) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. g) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. h) Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. **Mitigation Measure AQ-2B: Enhanced Dust Control.** Because of the size of the site and the proximity of nearby sensitive receptors, the Project shall also comply with the following "Enhanced" mitigation measures as recommended by BAAQMD for reducing construction related emissions: a) All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe. b) All excavation, grading, and demolition activities shall be suspended when average wind speeds exceed 20 mph. c) Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	porosity. d) Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. e) The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. f) All trucks and equipment, including their tires, shall be washed off prior to leaving the site. g) Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. h) Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. i) Minimizing the idling time of diesel powered construction equipment to two minutes. j) The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. k) Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). l) Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM. m) Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
AQ-3: Construction of the Project would generate emissions of criteria air pollutants (ROG, NOx, PM10, and PM2.5) and evaporative emissions (ROG), but these emission levels for the Project would not exceed applicable air quality thresholds.	None needed. However, consistent with BAAQMD recommendations for all projects regardless of the significance level of construction-period criteria pollutant emissions, mitigated construction emissions assume a 20 percent reduction for NOx and a 45 percent reduction for PM10 and PM2.5 to account for limited idling times of construction equipment as included in the "Basic" dust control measures of **Mitigation Measure AQ-2A** above, which serve to further reduce construction-period criteria pollutant impacts.	Less than Significant
AQ-4: Use of heavy-duty off-road and on-road construction equipment would produce emissions of toxic air contaminants, including diesel PM2.5. Emissions from these construction activities would exceed the off-site community risk and hazards threshold of significance.	**Mitigation AQ-4: Construction-Period DPM Emission Reductions.** All off-road construction equipment greater than 25 horsepower shall have engines that meet or exceed either U.S. Environmental Protection Agency (USEPA) or California Air Resources Board (ARB) Tier 4 Final off-road emission standards. The Contractor may use the next cleanest piece of off-road equipment (i.e., Tier 3 Engine with Level 3 Verified Diesel Emission Control Strategy [VDECS], Tier 3 Engine with Level 2 VDECS, or Tier 3 Engine with alternative fuel), if: a) a particular piece of off-road equipment that meets these standards is technically not feasible; b) the equipment would not produce desired emissions reduction due to expected operating modes; c) installation of the equipment would create a safety hazard or impaired visibility for the operator; or, d) there is a compelling emergency need to use off-road equipment that does not meet these standards; and e) The Contactor develops a Construction Emissions Minimization Plan (CEMP) to describe the process used to identify the next cleanest piece of off-road equipment and the steps that will be taken to reduce emissions of criteria air pollutants to the greatest extent practicable.	Less than Significant
AQ-5: Operation of the Project will result in new emissions, primarily associated with vehicle trip generation. These new operational emissions will not violate air quality standards, contribute substantially to an existing or projected air quality violation, or otherwise exceed established thresholds. The Project is also compliant with all CARB-recommended siting criteria for	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
new sensitive receptors.		
AQ-6: The Project would not create objectionable odors affecting a substantial number of people.	None needed.	Less than Significant
Biological Resources		
Bio-1: Implementation of the Project would not result in a substantial adverse effect on candidate, sensitive or special-status plant species, either directly or through habitat modification.	None needed.	Less than Significant
Bio-2: Implementation of the Project could result in a substantial adverse effect on candidate, sensitive or special-status bird and bat species, both directly and through habitat modification. (Less than Significant with Mitigation)	**Mitigation Measure Bio-2a: Pre-Construction Nesting Surveys.** If grading operations or construction is scheduled during the nesting season of migratory birds (February 1 through August 30), trees in the Project site shall be surveyed including call surveys as appropriate for nesting migratory birds. a) Surveys shall be conducted within the following buffers of the construction site: 1) 150 feet for nesting raptors, and 2) 500 feet for nesting passerines. b) The surveys shall be conducted no more than 15 days prior to the start of any ground disturbing activities. c) If an active nest is found prior to construction or during construction activities, a qualified biologist, in consultation with CDFW, shall determine the appropriate buffer size and delineate the buffer using ESA-approved fencing, pin flags, and/or yellow-caution tape. A buffer zone shall be maintained around all active nest sites until the young have fledged and are foraging independently. d) In the event that an active nest is found after the completion of preconstruction surveys and after construction begins, all construction activities shall be stopped until a qualified biologist has evaluated the nest and erected the appropriate buffer around it. **Mitigation Measure Bio-2b: Pre-Construction Tree Roost Surveys.** For all tree removal and vegetation management activities the following measures shall be implemented to protect bats: a) In order to avoid the bat maternity periods and ensure protection of bat species tree removal shall be conducted between September 1st and March 31st. Should maintenance activities necessitate tree removal during the maternity roosting season (April 1st – August 31st) then a qualified biologist shall first perform a bat roost survey of trees within 7 days to determine if roosts are present. If no evidence is found, activities	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	may proceed. In the event that an active roost is observed within the work area than a work exclusion zone of 50 to 250 feet shall be established. Work within the exclusion zone shall not be permitted until the maternity roosting season has completed. The appropriate size of the exclusion zone shall be determined by a qualified biologist based upon the species and its susceptibility to disturbance. b) Any tree removal with breast diameter height (dbh) greater than 12 inches or with complex bark structures or cavities shall be felled and allowed to rest on the ground overnight prior to removal. c) Maintenance activities shall avoid the dust and dawn period to preclude impacts to emerging bats. Rather, activities shall occur between 1 hour after sunrise and one hour before sunset.	
Bio-3: Implementation of the Project could result in an adverse effect on candidate, sensitive or special-status reptile, and amphibian and fish species, both directly and through habitat modification.	**Mitigation Measure Bio-3A: Limitations on the Grading Period.** To the extent feasible, limit grading in the river area to the dry season, between June 15 and October 15, when low flow conditions are present in the River. Limit vegetation removal to the period between June 15 and November 15 to avoid potential impacts to anadromous fish species and nesting birds, and to avoid interfering with adult spawning migrations or the outmigration of smolts. **Mitigation Measure Bio-3B: Pre-Construction Surveys.** A qualified USFWS-approved biologist shall conduct pre-construction surveys of all ground disturbance areas within suitable habitats in the Project site to determine if California red-legged frogs and Western pond turtles are present prior to the start of grading operations. These surveys shall be conducted within 48 hours prior to the initiation of grading activities in habitats where these species have the potential to occur. a) Preconstruction surveys to detect western pond turtles should focus on suitable aerial and aquatic basking or nesting habitat such as logs, branches and riprap, as well as the shoreline and adjacent warm, shallow waters where pond turtles may be present below the water surface beneath algal mats or other surface vegetation. b) Where feasible, preconstruction surveys to detect western pond turtle nesting activity should be concentrated within 0.25 mile of suitable aquatic habitat and should focus on areas along south- or west-facing slopes with bare hard-packed clay or silt soils or a sparse vegetation of short grasses or forbs. **Mitigation Measure Bio-3C: Relocation.** If any special status species are found, they shall either be re-located, or an exclusion zone shall be established and maintained around the occupied habitat until the biological monitor, in consultation with the resource agencies, determines construction activities can proceed in these zones.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	a) Any re-location efforts shall be pre-approved by the resource agencies. b) If CRLF or WPT or their nesting sites are found, the biologist shall contact the CDFW to determine whether relocation and/or exclusion buffers and nest enclosures are appropriate. If the CDFW approves of moving the animal, the biologist shall be allowed sufficient time to move the animal(s) from the work site before work activities begin. **Mitigation Measure Bio-3D: Implement Best Management Practices.** Avoidance and minimization measures shall be employed prior to and during construction, as required and/or approved by the resource agencies, to protect special status species and sensitive habitats. These measures shall include, but not be limited to: a) A USFWS-approved biologist shall be present during grading and clearing activities that could result in harm to these species. The approved biologist shall have stop-work authority in the event that a California red-legged frog or Western pond turtle is found within the Project site. b) Install exclusion fencing around grading and clearing zones to keep species out. The areas approved for grading and clearing shall be delineated with temporary high-visibility orange-colored fence at least 4 feet in height, flagging, or other barriers. Signs shall be posted that clearly state that construction personnel and equipment shall not move outside of the marked area. The fencing shall be inspected by the USFWS-approved biologist and maintained daily until project completion. The fencing shall be removed only when all construction equipment is removed from the site. No construction activities shall take place outside the delineated project site. c) Have the Biological Monitor survey each zone periodically and relocate species as necessary. d) Prior to construction, a qualified biologist shall conduct training sessions to familiarize all construction personnel with the following: identification of California red-legged frog and their habitat, Western pond turtle and their habitat, identification of protected salmonids and their habitats, general provisions and protections afforded by the Endangered Species Act, measures implemented to protect the species, and a review of project site boundaries. e) To avoid attracting predators, food-related trash shall be kept in closed containers and removed daily from the project site. f) At the end of each day, all construction-related holes or trenches deeper than 1 foot shall be covered to prevent entrapment of potential California red-legged frog. During the process of reviewing the USACE permit application, the USACE would determine if they need to enter into consultation with the USFWS for impacts on the federally listed	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	California red-legged frog. If consultation with the USFWS for the California red-legged frog is needed, the City of Petaluma would comply with all the terms and conditions required by the USFWS.	
Bio-4: Development of the Project will result in the direct removal and fill of approximately 0.34 acres of seasonal wetlands defined by the US Army Corps of Engineers as jurisdictional wetlands under Section 404 of the Clean Water Act.	**Mitigation Measure Bio-4: Compensation for Seasonal Wetlands Fill.** The Project applicant shall provide on-site compensatory mitigation sufficient to achieve a no-net-loss standard, subject to additional requirements of the permitting agencies. Compensatory mitigation shall be achieved through creation, restoration, and enhancement of wetland habitat acreage at appropriate locations within the Project site, providing new, higher quality wetlands habitat value than the low value habitat lost as a result of Project fill and terrace grading. a) Compensatory wetland habitat shall ensure no net loss of habitat functions and values. b) Compensatory ratios shall be based on site-specific information and determined through coordination with the Corps and RWQCB. c) A Restoration and Monitoring plan for the compensatory wetlands shall be developed and implemented by the applicant. The Restoration and Monitoring Plan shall describe how the new wetlands shall be created and monitored over a minimum establishment period of five years.	Less than Significant
Bio-5: The Project's proposed terraced grading plan for the banks of the Petaluma River would result in substantial adverse effects on riparian habitat.	**Mitigation Measure Bio-5A: Riparian Preservation Zone.** Final grading plans for the Project's proposed terraced grading concept along the Petaluma River shall show a Riparian (Willow) Preservation Zone of a minimum of 0.30 acres in size, where the preservation of existing high quality riparian vegetation shall be achieved, while still accommodating an overall widened channel design that provides acceptable flood control containment. As the River Plan calls for all development (including grading and flood control alterations) to be severely restricted within the high priority Riparian Preservation Zone, all development, including trails, grading and flood control alterations, shall be prohibited in this Zone. (Minimal intrusions in a carefully selected location could be authorized by the City for interpretive purposes only.) **Mitigation Measure Bio-5B: Riparian Tree Preservation.** Special measures to protect riparian and oak woodland trees within and abutting the riparian zone, as that zone is expanded by the river terracing project, (including trees 65, 66, 68, 70-73, /106-107, 209-212, and 205-208, and the 0.30 acre willow ticket designated as the Riparian [Willow] Preservation Zone) such as temporary fencing, shall be required for river terracing and riverside path construction. **Mitigation Measure Bio-5C: Habitat Mitigation and Monitoring Plan.** A final Habitat	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	Mitigation and Monitoring Plan (HMMP) shall be submitted for review and approval by the regulatory agencies and the City. The City shall authorize the HMMP prior to issuance of the terrace grading plans. The Final HMMP shall be implemented. The HMMP shall include a landscape and biological restoration plan prepared and signed by a licensed landscape architect, either experienced in environmental restoration or with appropriate consultation and input from wetlands biologists, soil scientists and hydrologists. The goals and objectives for the HMMP must be clearly stated, and the plans must be developed based on a thorough analysis of existing biologic, soils, and hydrologic conditions, including a consideration of the historic plant community. a) When stabilized and restored, the Restoration Zone shall be designed and constructed such that it contributes significantly to the wildlife and fishery habitat values and water quality of the greenway. b) Restoration treatments shall include re-grading, slope stabilization and planting with genetically local native riparian and upland species. c) Access shall be generally restricted from the banks and bank-top areas in this zone, except at carefully selected and controlled points where overlooks and interpretive areas are permitted.	
Bio-6: The Project would result in potentially substantial adverse effects on the aquatic habitat within the Petaluma River, potentially interfering with the movement of native resident and migratory fish.	**Mitigation Measure Bio-6: Terraced Grading Erosion Control/Stormwater Pollution Prevention Plan.** The Project applicant shall prepare and implement a specific Terraced Grading Erosion Control Plan for all terrace grading work and trail construction within and abutting the Petaluma River floodplain. The discharge or creation of potential discharge of any soil material including silts, clay, sand, or any other materials to the waters of the State is prohibited. a) Install and maintain silt fences adjacent to the perimeter of the work area and immediately downstream of disturbed areas, and install and maintain erosion control blankets on all disturbed ground to prevent inadvertent transport of sediments into the Petaluma River. The Project applicant shall be responsible for ensuring that sediment-control devices are installed and maintained correctly. The devices shall be inspected frequently (e.g., daily) to ensure they are functioning properly. Controls shall be immediately repaired or replaced or additional controls shall be installed as necessary. Sediment that is captured in these controls may be disposed of onsite in an appropriate approved area, or off-site at an approved disposal site. b) Soil materials stockpiled at the site must be covered with plastic sheeting at the end of each workday until permanently protected with rock ballast materials.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	c) Spill prevention and control BMPs shall be implemented throughout grading activities. Train onsite personnel in spill prevention practices, and provide spill containment materials near all storage areas. All contractors are responsible for familiarizing their personnel with the information contained in the Storm Water Pollution Prevention Plan. d) Spills, leaks, and other problems of a similar nature shall be resolved immediately to prevent unnecessary impacts. A plan for the emergency cleanup of any spills of fuel or other material shall be available on-site, and workers shall be trained in techniques to reduce the chance for spills, contain and clean up spills, and properly dispose of spilled materials for the potential pollutants. Adequate materials for spill cleanup shall be maintained on-site and readily available to the employees of each contractor or subcontractor for immediate response should a spill occur on-site. e) Maintain all construction equipment to prevent oil or fluid leaks, use drip pans or other secondary containment measures beneath vehicles during storage, and regularly inspect all equipment and vehicles for fluid leaks. f) Water down all disturbed ground surfaces as necessary to minimize windblown dust. g) Fuel and service vehicles and equipment that are used during the course of the proposed grading operation, and park all grading equipment overnight on the upland portion of the site and in a safe area outside of sensitive habitats. Wash vehicles and equipment off-site. h) Implement the HMMP immediately after grading operations are complete to re-vegetate all disturbed areas.	
Bio-7: The Project could interfere substantially with the movement of native resident or migratory wildlife species, or with established native resident or migratory wildlife corridors along the Petaluma River.	**Mitigation Measure Bio-7A: Hooding or Shielding of Outdoor Lighting Fixtures.** All outdoor lighting including any lighting along the river trail shall be focused and directed to the specific location intended (e.g., walkways, sidewalks, paths). Such fixtures shall be hooded or shielded to avoid the production of glare, minimize up-light, and light spill. All light fixtures shall be located, aimed, or shielded to minimize spill-light into the riparian corridor and associated trees; this shall be demonstrated as a component of SPAR review. (The River Plan Design Guidelines states that some portions of the river trail may be lit.) **Mitigation Measure Bio-7B: Pre-Construction Surveys (see Mitigation Measure Bio-1A).** This measure requires pre-construction biological surveys and determination of avoidance measures as necessary during construction. **Mitigation Measure Bio-7C: Avoidance and Minimization (see Mitigation Measure Bio-3).** This measure requires avoidance and minimization measures to be employed prior to and during all grading and construction activities within the Petaluma River, as required and/or	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	approved by subsequent permitting agencies, to protect special status species and sensitive habitats. These measures include, but are not limited to restricting grading operations to the dry season (between June 15 and October 15) when low flow conditions are present in the River, and restricting vegetation removal to the period of June 15 to November 15 to avoid potential impacts to anadromous fish species and nesting birds.	
Bio-8: The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	None needed.	No Impact
Bio-9: Implementation of the Project could result in a substantial adverse effect on riparian habitat through the introduction of invasive, non-native plants.	**Mitigation Bio-9: Incorporation of Native Plants in Landscaping Plans.** As part of the Project's Site Plan and Architectural Review process, the Project applicant shall submit a Landscape Plan for review and approval by the City. The landscape Plan shall incorporate planting of native trees and ground cover plants consistent with the goals and objectives for this reach of the River as described in the Petaluma River Access and Enhancement Plan. a) The Landscape Plan shall only include plants from the City's approved list of commonly occurring native riparian plant species for landscaping proposed within the Petaluma River Preservation and Restoration zones. b) In the Buffer Zone (including 200 feet from the River centerline and its extension 50' from oak drip lines and wetlands and 30' from constructed river terrace top of bank), the Landscape Plan shall incorporate riparian buffer zone plantings as recommended from the City of Petaluma's approved list (including River Plan page 165 and Chapter 5, Table 1). The planting objectives in this riparian buffer will be to minimize removal of native vegetation and re-plant, where appropriate, with native plants species. c) Landscaping within the River Oriented Development Zone (i.e., the Project's upland development area on existing Parcel -009) shall include use of "compatible" plants, as defined in the River Plan (Chapter 5, Tables 1 and 2). d) Although not included as part of the River Plan's River Oriented Development Zone, landscaping within existing Parcel -006 should be similar to that in the RODZ.	Less than Significant
Bio-10: The Project could conflict with local policies and ordinances protecting biological resources, including the City's Petaluma River Plan Corridor.	**Mitigation Bio-10A: Preclude Residential Development from intruding into the Petaluma River Plan Corridor.** No portion of the residential component of the Project shall extend into the Petaluma River Plan Corridor (comprised of the Preservation, Restoration, and Buffer management zones of the River Plan; see Corridor mapped at Figure 6-6). (See also Bio-11A) Only River Plan Corridor components shall be allowed with the Corridor including the river	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	trail, terracing and restoration. **Mitigation Bio-10B: RODZ review at SPAR.** The Site Plan and Architectural Review process shall include evaluation and review of the Project for consistency with River Oriented Development Zone (RODZ) policies and design guidelines. (See River Plan page 79-80 and Chapter 9: Design Guidelines.) As the concept plan for the apartment project is fully detailed for Site Plan and Architectural Review, the northern portion of the Project that is within the RODZ (Parcel -009) shall be designed pursuant to the RODZ Guidelines.	
Bio-11: The Project could conflict with local policies and ordinances protecting biological resources, including the City's tree preservation policies and ordinance.	**Mitigation Measure Bio-11A: Further Preservation of Existing Trees.** To achieve greater consistency with the City's River Plan, the Residential portion of the Project should be redesigned to reflect the goal of preserving protected trees, particularly those protected trees located within the Petaluma River Plan Corridor (being that oak woodland habitat along the river which the River Plan calls to be protected particularly), and those oaks isolated in the RODZ, to the greatest extent possible. While it is recognized that the preservation of all existing trees on the Project site may conflict with reasonable land development considerations and with creation of the terrace directed by the General Plan, the design of the Project shall seek to preserve the most desirable and significant healthy trees on site. a) No protected tree shall be removed unless a tree removal, grading or building permit is issued by the Community Development Department. b) The residential structures and their associated improvements shall be shifted so as to not extend into the Petaluma River Plan Corridor. Protected healthy oak trees located within the Petaluma River Corridor (trees #69, 75, 77 and 79) shall be preserved by a reasonable redesign of the residential Project. Within the Petaluma River Plan Corridor, the small California bay (#74) shall also be preserved as a native within the Corridor, while eucalyptus (#76) shall be removed as an exotic species undesirable near a riparian setting. c) As River Plan policy 20 (page 80) specifically directs the protection, restoration, and enhancement of fragile habitat isolated in the RODZ, such as oaks, whenever feasible and as Condition 5 of the Oak Creek Apartments PUD states all existing on-site oak trees shall be permanently preserved, preservation of the most healthy and mature oak trees on APN-009 shall be pursued during Site Plan and Architectural Review; these are oaks #36 and #59 – 62, all 5 of which were found to be in good to excellent condition and each of which is a mature oak ranging from 21 to 37 inches in diameter. Other trees shall also be considered for preservation but may not warrant the same level of priority, being either	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	burned and in only fair condition (oak 37) or young as compared to oaks #36 and #59-62 and thus replaceable within a shorter period of time than the mature oaks (oaks #101 and 202, being within the dripline of to-be-preserved oak #38 and near the to-be-preserved landscaped turn-around respectively). d) The Site Plan and Architectural Review process shall further consider site design modifications to preserve Protected trees to the greatest extent possible at APN-006 generally (as directed by the Tree Ordinance). Each Protected tree shall be further considered for preservation; oaks #1, 13, 17, and 100 shall be particularly pursued. e) During preparation of the site plan for Site Plan and Architectural Review, the applicant shall work collaboratively with the arborist and the civil engineer to design a site plan that addresses Bio 11 b through d. The arborist shall provide the further tree preservation analysis, as part of the SPAR submittal. **Mitigation Measure Bio-11B: Protected Tree Replacements.** For all protected trees permitted by the City to be removed, the project applicant shall provide replacement trees at the following ratios: a) All protected trees determined by the Project arborist to be in good or excellent health, and/or with moderate to good structure, shall be replaced on a one-to-one trunk diameter basis. (Example: A 24-inch protected tree in good or excellent condition must be replaced with new trees totaling 24 inches in trunk diameters.) b) All protected trees determined by the Project arborist to have fair or marginal health, and/or with marginal structure, shall be replaced on a two-to-one trunk diameter basis. (Example: A 24-inch protected tree in fair-to-marginal condition must be replaced with new trees totaling 12 inches in trunk diameter c) Replacement tree ratios shall be applied as follows: i) 24-inch box replacement tree = 2-inch replacement trunk diameter ii) 36-inch box replacement tree = 3-inch trunk replacement diameter iii) 48-inch box replacement tree = 4-inch trunk replacement diameter d) Replacement trees shall be at minimum 24-inch box size. e) All protected trees determined by the Project arborist to have poor health or poor structure are not required to be replaced. f) Replacement trees shall be planted within the Project boundaries to the extent feasible, and the applicant shall find suitable off-site location(s) for the required trees if on-site replacement is found infeasible. g) If the location of replacement tree planting will remain as a natural area suitable for the healthy and long-term growth of native trees, replacement of protected trees should	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	occur in-kind. If the location of replacement tree planting will be part of an irrigated, ornamental landscape area, replacement of protected trees may occur with a species as identified by the project arborist and approved by the City Planning Department **Mitigation Measure Bio-11C: Tree Protection Plan.** All trees designated for preservation must have a good chance of long-term survival; specific recommendations to avoid firstly construction and then long-term impacts shall be included for each to-be-preserved tree. Simply preserving a tree does not excuse it from designated mitigation requirements. Preserved trees must have a good chance to survive after all the impacts of construction are considered. Consistent with the recommendations for tree protection as listed in the Petaluma River Access and Enhancement Plan (RAEP), a tree protection plan for the Project shall be prepared by a licensed landscape architect, arborist or certified forester and approved by the City, for all trees proposed to be preserved within the Project to protect them during on-site grading and construction. The River Plan includes the following tree protection measures: a) All trees over five feet tall, or with a diameter over six inches measured at 4.5 feet in height over ground level, must be drawn to scale on plans, including species, approximate age and height, diameter at three feet and drip line. Also, show trees on adjacent property if the property line abuts or goes under drip line. Oaks to 4" in diameter, within 50' of the property line should be called out separately. b) Plans shall indicate clearing, stripping and grading limits. Clearing and stripping limits must be staked on-site by the project engineer. c) All utility plans must be included and their location relative to trees shown on plans. d) Specific trees to be saved must be noted on the grading plans and shall be clearly marked on all plans and in the field. e) Trees within the clearing areas (including exotics) noted to be removed shall be clearly marked on plans and in the field. f) Applicants are encouraged to work closely with City staff to decide which trees, if any, must be removed. Convincing and compelling reasons must be provided for the removal of any native species. g) Bulkheads or tree wells may be used around trees where grading may be detrimental to the tree's preservation. h) No grading shall be done within the drip line of trees to be saved except where noted on approved grading or landscaping plan. i) Construction equipment is prohibited from areas of the site where no grading will occur. Storage of equipment, vehicles, topsoil or materials shall not be permitted within the drip	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	line of trees to be saved. Areas of natural vegetation shall be protected as necessary. j) Trees to be saved shall be fenced or protected to the satisfaction of the Planning Director prior to start of construction, and maintained throughout the construction period. k) If grading is permitted under a drip line, once grade has been established, a temporary six-foot tall chain link fence should be installed around the tree at a distance of six feet minimum (or at a distance to be determined by arborist), from the trunk. This fence is to remain until construction is complete. Nothing may be stored inside this fence. l) All excavation within a tree's drip line should be done by hand with a shovel and pick. If a woody root is encountered, care should be taken not to split the root, as this would create an entrance site for disease that can destroy the root and grow into the tree via the root. The roots should be wrapped in wet burlap to protect them from drying out while they are out of the soil. If a root needs to be cut, a very sharp hand pruning saw should be used. Again, be careful not to split or twist the root or allow it to dry out. m) If a utility line must be installed within a drip line, drill or bore the conduit through the soil rather than digging a trench. Less root damage will occur. Place all utility lines in the same passage, if possible, to avoid disruptions to the root zone. n) There should be no trenching, drilling, or boring within six feet of the trunk. In parking lots, irrigation and airification devices must be installed. o) If paving is necessary within the drip line, use porous materials such as gravel, cobbles, brick with sand joints, wood chips or bark mulch. p) Non-oak trees should be irrigated before construction starts. Oak trees should be irrigated prior to August 1. This will ensure that the trees can better withstand the stress of construction. Irrigation is extremely important during spring and summer for stressed, mature non-oak native species. q) After construction, do not fertilize the native oak trees until the following season's leaf is matured. This prevents a construction stressed tree from further decline by over-expending its energy reserves in response to the fertilizer. r) During the course of construction operations, any pruning of trees designated on plans as to be saved, shall be performed under the supervision of a qualified arborist. No pruning by construction personnel is permitted. Care shall be taken to ensure that proper pruning, thinning and treatment for disease prevention shall be employed. s) Any additional tree removals necessitated during the course of construction operations, but not shown for removal on approved plans, shall be inspected and approved by the Planning Department prior to such removals. Planting of specimen trees (36 inch box) at a compensation rate of at least 3:1, or as determined by the City will likely be required to replace trees damaged or removed during construction.	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	t) On-site inspections by the project engineer and landscape architect shall ensure that there is no encroachment into the areas beyond the "limits of grading" as shown. Trees outside the grading area, or designated to be saved, are to be adequately protected during construction operations. u) Landscaping under native oak trees should consist of drought tolerant plants or California native plants that are drought tolerant in nature and must not require supplemental water so as to be detrimental to the trees. There is to be no landscaping within the drip line. Chipped bark, mulch, or cobblestones are suitable for this area. No lawns should be planted within the drip line. v) Permanent irrigation systems should be bubbler, drip, or sub-terrain only. No sprinkler systems should be allowed within six feet of trees, except for Oaks. Oaks may have a temporary drip only. w) A manually operated drip system is the preferable method of irrigation within the drip line, although irrigation is not recommended under established native oaks at all, and especially not in the summer. Never allow irrigation water to seep into the six-foot radius or pool around the root crown	
Bio-12: Removal of Phytophora ramorum host plant materials during tree removal could result in the spread of Sudden Oak Death to the Petaluma River riparian habitat.	**Mitigation Measure Bio-12A: Infected Tree Identification.** Pursuant to the City's tree removal permit process, all trees of "at-risk" species that are proposed to be removed shall be surveyed for sudden oak death pathogens, and individual treatment methods identified. **Mitigation Measure Bio-12B: Tree Removal Precautions.** If a tree needs to be removed, the tree stump should be cut as close to the ground as practical. Stump grinding is not recommended because the equipment may become contaminated by soil and result in pathogen spread when used at another location. The operation of vehicles or heavy equipment in such areas may lead to further disease spread when soil is disturbed and moved around. If at all practical, tree removal should be scheduled between June to October when conditions are warm and dry, and avoid removing diseased trees when moist conditions favor pathogen spread (November to May). **Mitigation Measure Bio-12C: Debris Removal Precautions.** Proper disposal of infested material is an effective means of limiting the spread of pathogens. In infested areas, leaving infected or dead trees on site has not been shown to increase the risk of infection to adjacent trees. Removal from a property is only recommended if it is the first infected tree to be detected in the area, or the fire risk is high, or if the dead tree is a safety hazard. If debris cannot be left on site, infested material should be disposed of at an approved and permitted dump facility.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	a) Whenever possible, the tree debris should be left on-site in a safe area where large woody debris will not move, endanger the public, contaminate uninfected hosts, or constitute a fire hazard. b) When infected oaks are cut down and left on site, branches should be chipped and larger wood pieces cut and split. Woodpiles should be stacked in sunny locations to promote rapid drying. c) Firewood and chips should not be left in an area where they might be transported to another location (e.g. trailside, parking areas, etc.).	
Cultural Resources		
Cultural-1: The Project would not cause a substantial adverse change in the significance of a known historical resource; however, there is a potential that unidentified resources may be present within the onsite wells, the removal of which could result in a potentially significant impact to historical resources unless mitigated.	**Mitigation Measure Cultural-1: Monitoring of Well Abandonment.** At such time as the two existing wells on the site are removed, a qualified archaeologist shall be present to record and recover any potentially significant historic-era deposits that may be uncovered. If historic materials are observed, they shall be recorded on the appropriate DPR forms and such forms filed with the CHRIS and the Planning Division. In the event that the onsite wells are abandoned and capped in place, then monitoring would be unnecessary, as no disturbance to potential resources would occur.	Less than Significant
Cultural-2: The Project has the potential to adversely impact the significance of undiscovered archeological resources.	**Mitigation Measure Cultural-2: Discovery of Unknown Archaeological Resources.** To reduce potential impacts on prehistoric site deposits during construction, a) The applicant shall retain the services of a qualified archaeological consultant approved by the City of Petaluma to monitor ground-disturbing activity near the Petaluma River; that is during the river terrace grading work. The archeologist shall monitor ground-disturbing activities according to a schedule agreed upon by the archeological consultant and the City of Petaluma. The monitor need only be present during activities that could impact significant archeological deposits. After considering the types of project activities and the probabilities of encountering a significant archaeological deposit, the City and the archaeologist shall adjust the monitoring frequency accordingly, or implement a cessation of the monitoring schedule altogether. b) If a concentration of artifacts or cultural soils is encountered during construction anywhere on-site, all soil disturbing activities within 100 feet of the deposit shall cease. The archaeological monitor shall have the authority to stop work and temporarily redirect crews and heavy equipment until the deposit is evaluated. The archaeological monitor shall immediately notify the City of Petaluma Planning Division of resources encountered. The archeological monitor shall, after making a reasonable effort to assess	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to the City and provide treatment recommendations.	
Cultural-3: The Project has the potential to adversely impact the significance of currently undiscovered paleontological resources.	**Mitigation Measure Cultural-3: Discovery of Unknown Paleontological Resources.** In the event paleontological resources are encountered, the applicant shall procure a qualified paleontologist approved by the City of Petaluma to document, evaluate, and assess the significance of the resource in accordance with the criteria set forth in the guidelines adopted by the Society of Vertebrate Paleontology, CEQA Guidelines Section 15064.5. a) In the event of discovery during construction, excavations within 100 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995). The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before earthmoving or grading is allowed to resume at the location of the find. b) If the City determines that avoidance is not feasible, the paleontologist shall prepare and recommend to the City an excavation plan for mitigating the effect of the project on the qualities that make the resource significant. The plan shall be submitted to the City for review and approval prior to resuming construction activities.	Less than Significant
Cultural-4: Ground disturbing activities associated with site preparation, grading, and excavation could disturb human remains, including those interred outside of formal cemeteries, which would be considered a potentially significant impact.	**Mitigation Measure Cultural-4: Discovery of Human Remains.** In the event that human remains are uncovered during earthmoving activities, all construction excavation activities shall be suspended and the following measures shall be undertaken in accordance with the Health and Safety Code Section 7050.5: a) The Sonoma County Coroner shall be contacted to determine that no investigation of the cause of death is required. b) If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours. c) The project sponsor shall retain a City-approved qualified archaeologist to provide adequate inspection, recommendations and retrieval, if appropriate. d) The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American, and shall contact such descendant in accordance with state law. e) The project sponsor shall be responsible for ensuring that human remains and associated grave goods are reburied with appropriate dignity at a place and process suitable to the most likely descendent.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Cultural-5: The Project site is not known to contain tribal cultural resource defined as a sacred place or an object with cultural value to a California Native American tribe.	**Mitigation Measures Cultural-2 through -4** identify procedures should any unknown tribal cultural resources be disturbed, impacts of the Project on tribal resources would be less than significant.	Less than Significant
Geology and Soils		
Geo-1: The Project would not expose people or structures to potentially substantial adverse effects involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or other substantial evidence.	None needed.	Less than Significant
Geo-2: The Project could expose people or structures to potentially substantial adverse effects involving strong seismic ground shaking.	**Mitigation Measure Geo-2A: Compliance with California Building Code.** Project development shall meet all requirements of the California Building Code Vols. 1 and 2, 2016 Edition, including the California Building Standards, 2015 Edition published by the International Conference of Building Officials (or most recent edition at the time of development), and as modified by the amendments, additions and deletions as adopted by the City of Petaluma. **Mitigation Measure Geo-2B: Incorporation of Geotechnical Investigation Recommendations.** Consistent with Chapter 18 of the Petaluma Building Code requirements, the recommendations of the RGH Consultants' Geotechnical Engineering Report Update for Sid Commons (January 20, 2015) regarding foundation and structural design, or equivalent measures, shall be incorporated in the final design of each structure, contingent upon concurrence by the City's Engineer and Chief Building Official. To ensure that appropriate construction techniques are incorporated, the City's Geotechnical Engineer shall inspect the construction work and certify to the City, prior to issuance of a certificate of occupancy, that all improvements have been constructed in accordance with the approved Geotechnical Investigation specifications.	Less than Significant
Geo-3: The Project would not expose people and structures to potentially substantial adverse effects involving seismic-related ground failure, including liquefaction.	None needed.	Less than Significant
Geo-4: The Project would not expose people or structures to potential substantial adverse effects due to the risk of loss, injury or death involving landslides.	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Geo-5: Portions of the Project site proposed for development contain localized expansive soil, creating substantial risks to property.	**Mitigation Measure Geo-5A: Soil Treatment.** The detrimental effects of expansive soil movements can be reduced by pre-swelling expansive soils and covering them with a moisture fixing and confining blanket of properly compacted non-expansive engineered fill (select fill). Select fill can consist of approved non-expansive on site soils, imported non-expansive materials or lime stabilized on-site clay soils. In building areas, the blanket thickness of select fill required depends on the expansion potential of the soils and the anticipated performance of the foundations and slabs. In order to effectively reduce foundation and slab heave given the expansion potential of the site's soils, a blanket thickness of 30 inches shall be utilized in building areas at the Project site. In exterior slab and paved areas, the select fill blanket need only be 12 inches thick. On-site and imported select fill materials shall have a low expansion potential (EI less than 50), and conform in general to the following requirements: a) Sieve size of 6 inches – 100% passing (by dry weight) b) Sieve size of 4 inches – 90% to 100% passing (by dry weight) c) No. 200 – 10% to 60% passing (by dry weight) **Mitigation Measure Geo-5B: Foundation Design.** The Project's proposed structures shall be supported on either post-tensioned slabs or mat slabs. These slabs shall be designed using the expansion characteristics of the soils. Grading to prepare the building pads shall consist of reworking the upper 2 to 3 feet of surface soils by excavating these soils, moisture conditioning them to at least 4 percent above optimum moisture content, and compacting them to at least 90 percent relative compaction, or as otherwise specified by the geotechnical engineer.	Less than Significant
Geo 6: The Project could result in the loss of topsoil as a result of development on potentially erodible soils	**Mitigation Measure Geo-6: Erosion Control Plan.** Prior to issuance of a grading permit, an erosion control plan, along with grading and drainage plans, shall be submitted to the City Engineer for review. All earthwork, grading, trenching, backfilling, and compaction operations shall be conducted in accordance with the City of Petaluma's Subdivision Ordinance (#1046, Title 20, Chapter 20.04 of the Petaluma Municipal Code) and Grading and Erosion Control Ordinance #1576, Title 17, Chapter 17.31 of the Petaluma Municipal Code). These plans shall detail erosion control measures such as site watering, sediment capture, equipment staging and laydown pad, and other erosion control measures to be implemented during construction activity on the project site. a) The Erosion Control Plan shall include winterization, dust control, erosion control and pollution control measures conforming to the ABAG Manual of Standards for Erosion and Sediment Control.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	b) The Erosion Control Plan shall describe the "best management practices" (BMPs) to be used during and following construction to control pollution resulting from both storm and construction water runoff. The Plan shall include locations of vehicle and equipment staging, portable restrooms, mobilization areas, and planned access routes. c) Recommended soil stabilization techniques include placement of straw wattles, silt fences, berms, and gravel construction entrance areas or other control to prevent tracking sediment onto city streets and into storm drains. d) Public works staff or representatives shall visit the site during grading and construction to ensure compliance with the grading ordinance and plans, and note any violations, which shall be corrected immediately.	
Geo-7: The Project would not be supported by the use of septic tanks or alternative wastewater disposal systems that would be reliant upon appropriate soil capabilities.	None needed.	No Impact
Geo-8: Development of the Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	None needed.	No Impact
Greenhouse Gas Emissions		
GHG-1: In the absence of BAAQMD thresholds for construction-related greenhouse gas emissions, emissions from construction have been conservatively compared to the threshold of significance for operation (1,100 MT CO2e/year), and found to generate emissions that exceed that threshold.	BAAQMD recommends that all proposed projects implement Best Management Practices to reduce GHG emissions during construction. **Measure AQ-4A** set forth in Chapter 5 provides for implementation of BMPs, which would reduce construction-period GHG emissions.	Less than Significant
GHG-2: The Project would generate greenhouse gas emissions from both direct and indirect sources that would produce total emissions of more than 1,100 metric tons of CO2e annually, but not more than 4.6 metric tons of CO2e per service population annually.	None needed.	Less than Significant
GHG-3: The Project would not fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions.	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Hazards and Hazardous Materials		
Haz-1: The Project site is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and development of the Project at this site would not create a significant hazard to the public or the environment.	**Mitigation Measure Haz-1: Soil Testing and Regulatory Compliance.** Prior to issuance of building or grading permits, the project applicant shall conduct a soil testing program to identify the potential for agricultural chemicals to be present in the soils at levels exceeding recommended health screening levels. Should any pesticide-impacted soil be discovered that exceeds California Human Health Screening Levels (CHHSLs) and/or Environmental Screening Levels (ESLs), such soils shall be excavated and removed for appropriate off-site disposal prior to development pursuant to existing regulatory requirements.	Less than Significant
Haz-2: Construction activities require the use of fuels and oils in construction equipment that may be considered hazardous if improperly used, stored or handled. Residential developments generally utilize only incidental amounts of household hazardous chemicals. Compliance with applicable regulations will ensure that construction and operation of the Project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of potentially hazardous materials.	None needed.	Less than Significant
Haz-3: The Project could 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.	Specific design requirements and implementation measures for minimizing Project-generated erosion and for controlling fuel/hazardous material spills to be set forth in the applicant's SWPPP are identified in the following mitigation measure (see Chapter 11: Hydrology): **Mitigation Measure Hydro-1: SWPPP Requirements**.	Less than Significant
Haz-4: The Project will not produce hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste that could impact an existing or proposed school.	None needed.	Less than Significant
Haz-5: The Project would result in increased hazards associated with increased presence along the rail racks.	**Mitigation Measure Haz-5: Fencing.** The Project shall include appropriate fencing along the edge of and parallel to the rail tracks to limit access onto the railroad right-of-way.	Less than Significant
Haz-6: The Project would result in increased hazards associated with at-grade rail crossings, including traffic, bicycle and pedestrian crossings at a potentially unsafe	**Mitigation Measure Haz-6: Grade Separation.** Any access to the Project site proposed as an extension of Shasta Avenue shall include plans for a grade-separated crossing of the rail tracks.	***Significant and Unavoidable*** Construction of a

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
location, and increased presence along the rail racks.	a) Any proposal for a grade-separated crossing of the rail tracks at Shasta Avenue shall be accompanied by detailed design plans which shall be subject to subsequent or supplemental review by the City, as well as approval by the CPUC, prior to construction. b) Any plans submitted to the City of Petaluma for such a grade-separated crossing must be accompanied by a Fire Protection Engineer Report, per the requirements of the City of Petaluma Fire Department.	grade separated structure with a design that could be supported by the CPUC and the City of Petaluma may not be feasible. As such, this impact is considered a significant and unavoidable impact of the Project as proposed.
Haz-7: The Project provides adequate emergency access to the future residential development site.	None needed.	Less than Significant Allowing primary access for buildout of the Project from Graylawn Avenue only will result in traffic levels on Graylawn exceeding the City of Petaluma's "livable streets threshold" by introducing more vehicle trips per day than the City residential street standard allows.
Hydrology and Water Quality		
Hydro-1: During construction, the Project could alter existing drainage patterns of the site in a manner that could result in substantial erosion or siltation, and	**Mitigation Measure Hydro-1: SWPPP Requirements.** Design requirements and implementation measures for minimizing Project-generated erosion and for controlling fuel/hazardous material spills shall be set forth in the applicant's SWPPP, in accordance with	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
provide substantial additional sources of polluted runoff.	State and RWQCB design standards. It is recommended that the SWPPP, at a minimum, include the following or similar provisions: a) Leave existing vegetated areas undisturbed until construction of improvements on each portion of the development site is ready to begin; b) Immediately re-vegetate or otherwise protect all disturbed areas from both wind and water erosion upon the completion of grading; c) Collect storm water runoff into stable drainage channels, from small drainage basins, to prevent the buildup of large, potentially erosive storm water flows; d) Direct runoff away from all areas disturbed by construction; e) Use sediment ponds or siltation basins to trap eroded soils before runoff is discharged into onsite or off-site drainage culverts and channels; f) Install straw rolls, straw bales or other approved materials below all disturbed areas adjacent to the Petaluma River and surrounding all wetland areas to be retained, to prevent eroded soils from entering the river channel. Maintain these facilities until all disturbed upslope areas are fully stabilized, in the opinion of the City Engineer; g) To the extent possible, schedule major site development work involving excavation and earthmoving for construction during the dry season; h) Develop and implement a program for the handling, storage, use, and disposal of fuels and hazardous materials. The program should also include a contingency plan covering accidental hazardous material spills; i) BMPs shall be used for preventing the discharge or other construction-related NPDES pollutants beside sediment (i.e. paint, concrete, etc.) to downstream waters. j) Avoid cleaning, fueling, or maintaining vehicles on-site, except in an area designated to contain and treat runoff; and k) After construction is completed, inspect all drainage facilities immediately downstream of the grading site for accumulated sediment, and clear these facilities of debris and sediment as necessary.	
Hydro-2: During Project operations, the Project would contribute runoff water that could provide substantial additional sources of polluted runoff and that could otherwise substantially degrade water quality.	**Mitigation Measure Hydro-2A: SWCP Implementation.** The Project shall design, construct and implement appropriate post-construction stormwater treatment measures to reduce water quality and hydromodification impacts to downstream reaches, as required by the current post-construction control requirements of the Small MS4 General Permit. Upon completion of the final project design, the applicant shall provide documentation of stormwater management measures that show compliance with the Small MS4 General Permit.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	a) The report shall delineate individual drainage management areas (DMAs) within the Project site, and provide analysis to show compliance with the volumetric or flow-based treatment criteria as described in the Small MS4 General Permit. b) The Projects SWCP must provide the capacity to either infiltrate or evapotranspire all runoff generated by the 85th percentile storm event. c) Treatment measures must be provided for runoff that cannot be diverted to the site's storm water system, using specified Best Management Practices able to remove or otherwise neutralize identified pollutants. d) Water quality improvements shall not be placed so low in the floodplain that they are inundated by a 2-year storm. **Mitigation Measure Hydro-2B: SWCP Monitoring and Maintenance Agreement.** Prior to public improvement plan approval, a mechanism shall be in place to ensure funding of on-going maintenance, inspection, and as needed repair of the Project SWCP, including the maintenance of the proposed Terracing Plan. a) Maintenance requirements and frequency shall be carefully described including vector control, clearing of clogged or obstructed inlet or outlet structures, vegetation/landscape maintenance, replacement of media filters, regular sweeping of parking lots and other paved areas, etc. b) Wastes removed from BMPs may be hazardous. Therefore, maintenance costs should be budgeted to include disposal at a proper site. c) The monitoring and maintenance program shall be conducted at the frequency agreed upon by the RWQCB and/or City of Petaluma. Monitoring and maintenance shall be recorded and submitted annually to the SWRCB. The SWCP may be adjusted as necessary to address any inadequacies of the BMPs. d) Provide maintenance funding in perpetuity for maintenance of all stormwater related improvements, subject to City approval. Funding mechanism shall be by taxation, not subject to repeal through property owner or renter action. e) The Project applicant shall prepare informational literature and guidance on residential development BMPs to minimize pollutant contributions from the proposed development. This information shall be distributed to all adult residents at the Project site. At a minimum, the information shall cover: a) proper disposal of commercial cleaning chemicals; b) proper use of landscaping chemicals; c) clean-up and appropriate disposal of hazardous materials and chemicals; and d) prohibition of any washing and dumping of materials and chemicals into storm drains. f) The terraced flood plain shall be inspected at least annually, prior to the onset of the	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	rainy season, by a Civil Engineer licensed to practice in the State of California, to ensure that the terracing is performing as designed and required in project approvals. The Civil Engineer shall prepare a signed and sealed report of the inspection including findings, photo documentation, any necessary proposed modifications and a statement indicating that the system is operating as designed and required by project approvals. The annual report shall be submitted to the City of Petaluma Planning Division and Department of Public Works and Utilities no later than October 15th of each year.	
Hydro-3: The Project would not place any new housing or create any new habitable space on the first floor of a new building that is located within a regulated floodplain (i.e., within a 100-year flood hazard area as defined on applicable FEMA Flood Insurance Rate Maps).	None needed.	Less than Significant
Hydro-4: The Project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, nor would it create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.	None needed.	Less than Significant
Hydro-5: The Project's proposed riverbank terrace grading would not substantially alter the course of the Petaluma River in a manner that could cause increased risk or severity of on-site or off-site flooding.	None needed.	Less than Significant
Hydro-6: The proposed Project will not draw upon or otherwise reduce groundwater resources.	None needed.	Less than Significant
Hydro-7: The Project site is not located in an area that would expose persons to inundation by seiche, tsunami, or mudflow. The Project site is nearly level and is not in proximity to any large lake or the ocean.	None needed.	Less than Significant
Hydro-8: Sea Level Rise: Future structures at the Project site would not be subject to hazards associated with increased flooding of the Petaluma River due to sea level rise.	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Land Use		
LU-1: Conflict with Petaluma River Access and Enhancement Plan. Development of the Project site as proposed would result in the filling of areas identified as "wetlands" within the River Oriented Development Zone (RODZ) in the Petaluma River Access and Enhancement Plan, and would result in the removal of mature oak trees at the site. This would be in conflict with objectives, policies and programs identified in the Petaluma River Access and Enhancement Plan.	The following Mitigation Measures for the Project set forth in throughout this DEIR, primarily in Chapter 6: Biology, would mitigate impacts to biological resources and would serve to minimize conflicts with objectives, policies and programs of the Petaluma River Access and Enhancement Plan: **Mitigation Measure Bio-4: Compensation for Seasonal Wetlands Fill** **Mitigation Measure Bio-5A: Riparian Preservation Zone** **Mitigation Measure Bio-5B: Riparian Tree Preservation** **Mitigation Measure Bio-5C: Habitat Mitigation and Monitoring Plan** **Mitigation Measure Bio-6: Terraced Grading Erosion Control/Stormwater Pollution Prevention Plan** **Mitigation Bio-9: Incorporation of Native Plants in Landscaping Plans** **Mitigation Bio-10A: Preclude Residential Development from intruding into the Petaluma River Plan Corridor (also listed as Mitigation Measure Visual-2)** **Mitigation Bio-10B: RODZ review at SPAR** **Mitigation Measure Bio-11A: Further Preservation of Existing Trees** **Mitigation Measure Bio-11B: Protected Tree Replacements** **Mitigation Measure Bio-11C: Tree Protection Plan**	Less than Significant
Noise		
Noise-1: The proposed Project would expose new residents to reasonably foreseeable future train noise levels in excess of the 60 dBA Ldn threshold established by the FTA for outdoor use in residential areas affected by transit projects.	**Mitigation Measure Noise 1A - Achieve "Conditionally Acceptable" Noise Levels:** The Project's design shall move the residential building that is located at the northwesterly portion of the Project site inward from the rail line, such that it is no closer than the calculated 65 dB Ldn contour (i.e., at 54 feet from the railroad tracks), and within a "conditionally acceptable" noise environment. No residential structure shall be located closer than the calculated 65 dB Ldn contour. **Mitigation Measure Noise-1B: Noise Insulation.** Prior to approval of building permits, a qualified acoustical consultant shall review final designs for floor plans and exterior elevations for construction of all residential buildings within the Project site. The design level acoustical report shall provide specific noise control treatment to achieve interior noise levels of 45 dBA or lower. The acoustical consultant shall identify and include on the plans	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	and specifications for the Project, those specific noise insulation treatments (i.e., sound rated windows and doors, sound-rated wall construction, acoustical caulking, protected ventilation openings, stucco siding, thicker walls, bedroom orientation, etc.) that are to be applied. **Mitigation Measure Noise 1C - Outdoor Noise Exposure**: The Project's design shall not locate any outdoor use area closer than the calculated 61 dB Ldn contour (which is approximately 109 feet from the tracks), or shall provide noise attenuation for any outdoor use area proposed to be located within the 61 dB Ldn contour, such as the outdoor use areas at the most northerly and most southerly proposed building locations. Means capable of shielding these outdoor use areas to achieve a maximum Ldn of 61 dBA may include incorporating a noise barrier into the building design (e.g., a fence or wall measuring at least 6 feet high and subject to Site Plan and Architectural Review approval) and/or placing outdoor use areas only on the opposite side of the residential structure from the rail line (such that the structure screens noise from the rail).	
Noise-2: The proposed Project would expose new residents to reasonably foreseeable vibration levels in excess of 72 VdB re 1 µ-inch/second, the threshold established by the FTA and FRA for residential uses.	**Mitigation Measure Noise-2: Avoidance/Vibration Attenuation Measures.** The Project shall incorporate the following vibration avoidance or reduction strategies as part of its design and/or construction. a) Either remove or relocate the residential building proposed at the northwesterly portion of the Project site to a different location, such that it is no closer than 100 feet from the railroad tracks (i.e., outside of the vibration threshold contour; or b) Provide structural design measures into the design of the northwesterly most residential building as necessary to reduce groundborne vibration to below threshold levels. Special building methods can be incorporated to reduce groundborne vibration being transmitted into project structures. Potential methods for reducing groundborne vibration may include, but are not limited to isolation of foundation and footings using resilient spring supports, supporting the building on elastomer pads similar to bridge bearing pads, or excavating soil between the vibration source and the project so that the vibration path is interrupted and thereby reducing the vibration levels before they enter the project's structures.	Less than Significant
Noise-3: The proposed Project would expose new residents to reasonably foreseeable future train horn noise levels from trains crossing the existing Payran crossing, and would expose existing and new residents to	**Mitigation Measure Noise-3: Quiet Zone.** The Project applicant shall be responsible for obtaining a "Quiet Zone" designation for the Shasta Avenue crossings. A Quiet Zone application must be a joint application between the local jurisdiction and the rail operator, and must include supplementary safety measures to ensure that safety is not compromised	***Significant and Unavoidable*** Neither the Project applicant nor the

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
reasonably foreseeable future train horn noise levels from trains crossing the proposed Shasta crossing. These noise levels would be a substantial periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project, and that would result in substantial speech interference.	by eliminating the sounding of the train horns. a) FRA Interim Train Horn Rule allows automated train horns to be used in place of locomotive horns at individual or multiple at-grade crossings, including those within quiet zones. The automated or "wayside" horn is a stationary horn located at a grade crossing and designed to provide audible warning to oncoming motorists of an approaching train. The wayside horn is considered a one-for-one substitute for the train horn. The crossing must also be equipped with flashing lights and gates. b) The Project applicant shall be financially responsible for all costs associated with obtaining the Quiet Zone designation and implementation of the supplementary safety measures, including installation of crossing controls that meet FRA requirements. Although the application of a Quiet Zone would help to reduce the number of people affected by warning horns at the Shasta Avenue crossing, this measure would not mitigate noise exposure to a less than significant level.	City of Petaluma can ensure that a Quiet Zone could be established at this crossing. Even with establishment of a Quiet Zone, noise from wayside horns would adversely affect homes (both new Project residences and existing residences).
Noise-4: Construction of the proposed Project would result in temporary or periodically significant noise impacts, especially where grading and construction activities are to be conducted in close proximity to existing and new sensitive receptors, specifically including the existing Oak Creek Apartments and neighbors along Bernice Court, Graylawn Avenue and Jesse Avenue.	**Mitigation Measure Noise-4A: Construction Hours.** Due to the proximity of sensitive receptors (residences) to the development areas, construction activities shall be required to comply with following, and shall be noted accordingly on construction contracts: a) Construction activities for all phases of construction, including servicing of construction equipment shall only be permitted during the hours of 7:30 a.m. and 6:00 p.m. Monday through Friday, and between 9:00 a.m. to 5:00 p.m. on Saturdays. However, when construction is occurring within 100' of new occupied residential units, it shall not begin until 8 a.m. during weekdays. b) Construction is prohibited on Sundays and on all holidays recognized by the City of Petaluma. c) Delivery of materials or equipment to the site and truck traffic coming to and from the site is restricted to the same construction hours specified above. **Mitigation Measure Noise-4B: Construction Engine Controls.** The Project Applicant shall implement the following engine controls to minimize disturbance to adjacent residential uses during Project construction: a) Construction equipment shall utilize the best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) in order to minimize construction noise impacts. These controls shall be used as necessary to reduce heavy equipment noise to 75 to 80 dBA (Leq) at 50 feet to	***Significant and Unavoidable***

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	minimize noise levels at the closest residential receptors. b) If impact equipment such as jack hammers, pavement breakers, and rock drills is used during construction, hydraulically or electric-powered equipment shall be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. c) Where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used. External jackets on the tools themselves shall also be used, where feasible. **Mitigation Measure Noise-4C: Stationary Equipment and Staging.** Locate stationary noise generating equipment that generates noise levels in excess of 65 dBA Leq as far as possible from sensitive receptors. a) If required to minimize potential noise conflicts, the equipment shall be shielded from noise sensitive receptors by using temporary walls, sound curtains, or other similar devices. b) The construction contractor shall not stage equipment within 200 feet of the existing residential land uses to the west and north of the project site. c) Heavy equipment, such as paving and grading equipment, shall be stored on-site whenever possible to minimize the need for extra heavy truck trips on local streets. **Mitigation Measure Noise-4D: Miscellaneous Construction Noise.** The contractor shall minimize use of vehicle backup alarms and other miscellaneous construction noise. a) A common approach to minimizing the use of backup alarms is to design the construction site with a circular flow pattern that minimizes backing up of trucks and other heavy equipment. b) Another approach to reducing the intrusion of backup alarms is to require all equipment on the site to be equipped with ambient sensitive alarms. With this type of alarm, the alarm sound is automatically adjusted based on the ambient noise. c) Construction worker's radios shall be controlled so as to be inaudible beyond the limits of the project site boundaries. **Mitigation Measure Noise-4E: Noise Barriers.** The construction contractor shall erect temporary walls, sound curtains or other similar devices along the southerly property line adjacent to the existing Oak Creek Apartments and neighbors along Bernice Court, Graylawn	

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	Avenue and Jesse Avenue to shield these existing sensitive receptors from construction noise. **Mitigation Measure Noise-4F: Noise Disturbance Coordinator.** The Project applicant / construction contractor shall designate a city-approved Noise Disturbance Coordinator, designated to respond to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented. The construction schedule and telephone number for the Noise Disturbance Coordinator shall be conspicuously posted at the Project construction site.	
Noise-5: Project Operational Noise Generation Noise due to the use and occupation of the project residences on adjacent noise sensitive uses is not expected to significantly increase or alter the existing noise environment at these uses.	None needed.	Less than Significant
Noise-6: Traffic generated by the Project would not result in a substantial, permanent significant increase in ambient noise levels in the vicinity. Traffic generated by the Project would not result in a permanent increase in ambient noise levels of 4 dBA or more, such that traffic noise would exceed "normally acceptable" noise levels at nearby land uses.	None needed.	Less than Significant
Traffic and Circulation		
Transp-1: The addition of Project-generated traffic to existing traffic conditions would not cause a level of service (LOS) standard established by the City of Petaluma to be exceeded at any study area intersections.	None needed.	Less than Significant
Transp-2: The addition of Project-generated traffic to the Pipeline scenario (without the Project) would cause a cumulative level of service standard established by the City of Petaluma to be exceeded at any study area intersection.	None needed	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Transp-3: The addition of Project-generated traffic to the Cumulative scenario (without the Project) would cause a cumulative level of service (LOS) standard established by the City of Petaluma to be exceeded at one study area intersection.	**Mitigation Measure Transp-3: Petaluma Boulevard/Shasta Avenue.** As presented in the Rainier Cross-Town Connector Draft EIR (prepared by URS Corporation, July 2014), restriping the existing westbound approach to Petaluma Boulevard North/Sycamore Lane (Shasta Avenue) to provide an exclusive left-turn lane and a shared left/through/right-turn lane plus an exclusive northbound right-turn lane would improve the intersection to LOS C in the PM peak hour under Cumulative Plus Project conditions. However, this additional right-turn lane would cause the pedestrian crossing distance to increase which would cause a secondary impact to pedestrians, based on the criteria set forth in the Petaluma General Plan. To reduce impacts to pedestrians resulting from increased crossing distances, a median refuge (at least five feet wide) should be installed for pedestrians crossing Shasta at the south leg of Petaluma Boulevard; these improvements are required as mitigation measures for the Rainier Cross-Town Connector Project. If the at-grade crossing is approved by the CPUC and the Shasta Avenue Extension project is approved and constructed, the Project would contribute traffic to this cumulative impact. Therefore, in addition to applicable Traffic Impact Fees, the applicant shall make a fair share contribution towards this intersection improvement. Prior to building permit issuance, the applicant shall calculate preliminary costs associated with the intersection improvement, subject to review and approval by the City Engineer.	Less than Significant
Transp-4: Project-generated traffic would not cause a freeway segment operating at LOS E or better to deteriorate to LOS F, and would not cause an increase in traffic on a freeway segment already exceeding LOS E by more than one percent of the freeway segment's design capacity.	None needed.	Less than Significant
Transp-5: The addition of Project-generated traffic to the Pipeline scenario (without the Project) would not cause a cumulative level of service (LOS) standard established for the freeway system to be exceeded.	None needed.	Less than Significant
Transp-6: The addition of Project-generated traffic to the Cumulative scenario without the Project would not cause a cumulative level of service (LOS) standard established for the freeway system to be exceeded.	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Transp-7: The Project would substantially increase roadway hazards and hazards for emergency vehicles accessing the Project site, due to the proposed at-grade rail crossing.	**Mitigation Measure Transp-7A: Grade Separated Vehicle Bridge.** Acceptable vehicular and emergency access to the Project site could be provided via a grade-separated bridge crossing over the rail tracks at the Shasta Extension to Graylawn. CPUC approval of such a vehicle bridge design is required prior to construction. **Mitigation Measure Transp-7B: At-Grade Rail Crossing Safety Improvements.** To improve vehicle and emergency vehicle safety at the proposed at-grade crossing at the Shasta Extension to Graylawn, the proposed crossing design shall be reviewed by a diagnostic team and undergo a detailed Engineering Study to identify the most effective and appropriate warning devices applicable for this crossing. If approved by the CPUC, the Project shall then implement all recommended improvements. Costs can vary widely depending on site conditions, improvements needed, and existing infrastructure. a) Federal law requires that, at a minimum, signs shall be posted at all rail crossings. The railroad cross-buck sign and other supplemental signs, potentially including advance warning signs, a "No Signal" or "Signal Ahead" sign, an advisory speed plate (if sight or geometric conditions require a speed lower than the posted speed limit), and use of YIELD or STOP signs are all types of signage that shall be considered. b) Pavement markings shall be used to supplement the warning messages presented by the crossing signs and other supplemental signs. Pavement markings in advance of roadway/rail grade crossings shall consist of an X, the letters RR, a NO PASSING marking, as well as certain transverse lines. c) Additional active traffic control devices should also be considered. Active control devices are those that give advance notice of the approach of a train, activated by the passage of a train over a detection circuit in the track. Active traffic control devices are supplemented with the same signs and pavement markings used for passive control, but also include: i. flashing light signals, including cantilevered flashing lights and LED flashing lights; ii. automatic gates, including four-quadrant gate systems in which the gates extend across both the approach and the departure side of roadway lanes to inhibit all traffic movements over the crossing; using roadway channelization with gates to prevent drivers from crossing the centerline pavement marking and driving around the gate; and barrier gate (movable automatic gates designed to close an approaching roadway temporarily); iii. horns and bells, including a warning bell used to supplement other active traffic control devices; and wayside horn systems, which consist of a horn or series of horns located at	**Significant and Unavoidable** Because of uncertainties associated with a grade separated bridge, and because the decision to construct a bridge is not within the jurisdiction of the City of Petaluma alone (i.e., it specifically requires CPUC approval), implementation of this measure cannot be assured. Safety impacts would not be fully avoided with implementation of all identified at-grade safety measures, and the City of Petaluma alone does not have the jurisdiction or ability to implement this measure (e.g., CPUC approval is required). Under the scenario whereby no Shasta

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	the roadway rail grade crossing and directed at oncoming motorists; and iv. other active devices such as active advance warning signs that provide motorists with advance warning that a train is approaching the crossing; active turn restriction signs that pre-empt nearby intersection traffic control signals at the approach of a train; and the use of pre-signals which stop traffic before it crosses the rail tracks and prevents vehicles from queuing across the grade crossing. If no Shasta Avenue Extension across the rail tracks were provided, the Project would provide only one primary point of vehicle access (Graylawn Avenue), with an emergency EVA access at Bernice Court. The Bernice Court frontage would provide an acceptable fire apparatus roadway meeting all turning radius and turnaround requirements of the Petaluma Fire Code and would meet emergency access requirements. Under this scenario, no roadway hazards or hazards for emergency vehicles accessing the Project site would occur.	Avenue Extension across the rail tracks were provided, Graylawn would provide the only primary means of access, and this would conflict with the City's design standards for a local Residential Road.
Transp-8: Under a scenario whereby a Shasta Extension to Graylawn (either an at-grade or above-grade crossing) is approved, the Project would substantially increase traffic on the existing sub-standard street section of Shasta Avenue.	**T**he Project includes a proposed improvement to Shasta Avenue on the west side of the rail tracks. These improvements include two, 12-foot travel lanes (one in each direction), 8-foot bike lanes on each side of the street, and curb and gutter and sidewalks along both sides of the street. These improvement would connect to the existing improved portion of Shasta, providing a fully improved roadway section from the rail tracks to Petaluma Boulevard North. **Mitigation Measure Transp-8: Shasta Avenue Street Improvements.** If the Project's proposed at-grade rail crossing at Shasta Avenue is approved by the CPUC, the Shasta Extension to Graylawn shall include a continuation of street improvements to the existing off-site road section of Shasta Avenue, from west of the rail tracks to the intersection at Petaluma Boulevard. The re-design shall be subject to review and approval at time of Improvement Plan review. Petaluma City Staff will coordinate review of all aspects of the improvements with the appropriate review committees. Pursuant to General Plan recommendations for this roadway, the Project's off-site improvements shall re-design Shasta Avenue to include: a) A roadway street design and construction standard that meets the City of Petaluma's standards as a collector road. b) Improvements to the multi-modal function of Petaluma Boulevard and potentially Shasta Avenue, specifically at the intersection at Shasta/Petaluma Boulevard. c) The introduction of pedestrian and transit amenities such as wider sidewalks, special paving treatments, bus priority treatments, landscaped medians, and street trees within	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	parking lanes. Without the Shasta Extension to Graylawn rail crossing, traffic generated by the Project would only be able to use Graylawn Avenue for access to the site. Although the addition of all Project-generated trips to Graylawn Avenue would not result in a significant CEQA impact, it would add to existing traffic levels on Graylawn and exceed the City's design standards for this road. Although not required as CEQA mitigation, the following are provided as an informational option and as a traffic engineering recommendation to address conflicts with the City's 2,000 ADT design standard for Graylawn Avenue as a residential road. • **Reduce Project Size to Fit Graylawn Design Capacity** • **Introduce Traffic Calming and Enhance Livability along Graylawn Avenue**	
Transp-9: The Project would create an inconsistency with adopted bicycle and pedestrian system plans, guidelines, policies and standards of the City of Petaluma.	**Mitigation Measure Transp-9A: Grade Separated Bridge.** Acceptable pedestrian and bicycle access to the Project site could potentially be provided via a grade-separated bridge crossing over the rail tracks at the Shasta Extension to Graylawn (similar to Mitigation Measure Transp-8A). CPUC approval of such a bridge design is required prior to construction. **Mitigation Measure Transp-9B: At-Grade Rail Crossing Safety Measures.** To improve pedestrian and bicycle safety at the proposed Shasta Extension to Graylawn at-grade crossing, the Project Sponsor shall fund a detailed Engineering Study of the proposed crossing, subject to review and approval of the City Engineer, to identify the most effective and appropriate warning devices applicable for this crossing. If the at-grade crossing is ultimately approved by the CPUC and the City of Petaluma, the Project shall then implement the recommended improvements. Costs can vary widely depending on site conditions, improvements needed, and existing infrastructure. a) The pedestrian/bicycle crossings should be designed to minimize the time required for pedestrians to cross, by designing the crossings so that the pedestrian paths of travel intersect the railroad track at a 90-degree angle. b) A number of passive pedestrian safety improvements should be considered for this crossing, and if approved, implemented. These passive measures may include, but are not limited to: i. Fencing and channelization; ii. swing gates and pedestrian barriers; iii. pavement markings, texturing and refuge areas; iv. fixed message signs;	**Significant and Unavoidable** Because of the uncertainties associated with a grade separated pedestrian bridge, and because the decision to construct a bridge is not within the jurisdiction of the City of Petaluma alone (i.e., it specifically requires CPUC approval), implementation of MM Transp-9A cannot be assured. Even with all applicable and appropriate safety

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	v. raising the approaches to the track and the area between the tracks to the level of the top of the rail, creating flat level areas to cross; and vi. minimizing problems with the flangeway gap width with approved flangeway filler. c) A number of active pedestrian safety improvements should also be considered for this crossing, and if approved, implemented. These active measures may include, but are not limited to: i. Flashers and audible active warning devices; ii. automated pedestrian gates and pedestrian signals; iii. variable message signs; and iv. use of railroad crossing "cross-buck" signs. d) A combination of audible and visual devices should be used to serve the accessibility needs of hearing-impaired and visually-impaired pedestrians. e) The implementation of pedestrian safety improvements should be accompanied by education to all Project area residents and neighbors through public service announcements, educational initiatives, school presentations, posting of all rail safety laws, etc., all sponsored by the Project applicant.	measures, the decision as to whether an at-grade crossing could be implemented rests with the CPUC. Since the City of Petaluma does not have the jurisdiction or ability to implement MM Transp-9B, implementation of this measure cannot be assured.
	Mitigation Measure Transp-9C: At-Grade Rail Crossing Safety Measures at Payran Avenue. To improve pedestrian and bicycle safety for Project residents and others at the existing Payran Street at-grade rail crossing, prior to Improvement Plan approval, the Project Sponsor shall fund a detailed Engineering Study of the existing crossing to identify the most effective and appropriate warning devices applicable for this crossing. This study shall be completed under direction of the City of Petaluma and in coordination with SMART to implement the recommended improvements at this location, and to determine fair-share payments towards any additional improvements.	Implementation of additional pedestrian and bicycle improvements at the Payran Street rail crossing would further ensure the Project's consistency with the City's Mobility Report goals and policies for pedestrian and bicycle circulation, and would reduce potential pedestrian and bicycle safety impacts to a less

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
		than significant level.
Transp-10: The Project would not result in a significant unanticipated increase in transit patronage beyond the system's current capacity, but potentially could result in development that is not appropriately accessible to transit riders (defined as within one-quarter mile of a transit stop).	None needed. **MM Transp-9A through -9C**, depending on feasibility of the Project's proposed rail crossing, would address standards applicable to accessibility to transit stops to and from the Project site.	Less than Significant
Transp-11: The on-site circulation plan provides adequate design to accommodate emergency vehicles accessing and circulating within the Project site.	None needed.	Less than Significant
Transp-12: The proposed project would cause temporary disruption to the transportation network due to construction.	**Mitigation Measure Transp-12: Prepare Construction Management Plan.** A construction management plan shall be prepared for review and approval by the City of Petaluma Public Works Department. The plan shall include at least the following items: a) Development of a construction truck route that would appear on all construction plans to limit truck and auto traffic on nearby streets. b) Comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures if required, sidewalk closure procedures if required, cones for drivers, and designated construction access routes. c) Evaluation of the need to provide flaggers or temporary traffic control at key intersections along the truck route(s) d) Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur e) Location of construction staging areas for materials, equipment, and vehicles if there is insufficient staging area within the work zone of the proposed project. f) Identification of truck routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; provision for monitoring surface streets used for truck movement so that any damage and debris attributable to the proposed project's construction trucks can be identified and corrected by the proposed project applicant. g) A process for responding to and tracking complaints pertaining to construction activity, including identification of an on-site complaint manager	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	h) Documentation of road pavement conditions for all routes that would be used by construction vehicles both before and after proposed project construction. Roads found to have been damaged by construction vehicles shall be repaired to the level at which they existed prior to construction of the proposed project.	
Utilities		
Utilities-1: There are sufficient water supplies available to serve the Project from existing entitlements and resources, and new or expanded entitlements are not needed. The Project will add to the cumulative demand for overall water supplies, and contribute to projected dry year water shortages. Therefore, the Project will be required, pursuant to existing regulations, to include water conservation strategies that will serve to reduce overall water demands to levels projected to be sustainable on a cumulative basis, and will be subject to those water shortage contingency plans that are now in place, and as may be implemented in the future.	None needed. With required implementation of water efficiency standards and payment of water impact fees, the Project will off-set its contribution to cumulative water demands to a less than significant level.	Less than Significant
Utilities-2: The Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, would not necessitate construction of new or expanded wastewater treatment facilities, or result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the Project's projected wastewater treatment demand in addition to existing commitments.	None needed.	Less than Significant
Utilities-3: The Project would not require or result in the construction of new storm water drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects.	None needed.	Less than Significant
Utilities-4: The Project would not result in the construction of new water, sewer or storm water drainage facilities, or the expansion of such facilities that	None needed.	Less than Significant

Table 2-1: Summary of Project Impacts and Mitigation Measures

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
would cause significant environmental effects.		
Utilities-5: The Project will be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.	None needed.	Less than Significant
Energy		
Energy-1: Construction and operation of the Project would increase the consumption of energy, but would not result in the wasteful, inefficient, and unnecessary consumption of energy.	None needed.	Less than Significant
Energy-2: The Project would not result in the excessive consumption of energy resources that could not be accommodated within the long-term electricity supply and distribution system or the long-term natural gas supply and distribution system.	None needed	Less than Significant
Energy-3: Project operation would not significantly increase peak and base-period electricity demand.	None needed	Less than Significant

Summary of Alternatives

Four alternatives to the proposed Project have been evaluated in this Draft EIR:

- No Project;
- APN-006 (Webb Parcel) Development Only;
- Redistributed Density Project; and
- Reduced Project

Alternative #1 - No Project / No Development Alternative

Alternative #1 presumes only the development that could occur at the Project site without any discretionary action. Specifically if the provisions of the 1982 PUD that restrict use of the larger, northern majority of the Project site (APN-009) are not lifted, then this portion of the site would remain limited to those uses permitted in the Agricultural district as specified in the Petaluma Zoning Ordinance. With no new approvals for development of this property, use of the APN-009 site would likely continue much as it is today, as a large and undeveloped private parcel. The No Project Alternative assumes development of 1 new single family home with accessory structures on the 4.39-acre APN-006 and on APN-009.

The APN-006 site would also remain as a privately owned undeveloped property, at least until a separate proposal for development may be brought forward. With no development on either the APN-006 or -009 sites, the Shasta Avenue Extension to Graylawn Avenue would not occur, and the Project's proposed river terraced grading would not occur.

Alternative #2 - APN-006 (Webb Parcel) Development Only

Under Alternative #2, the Project's proposed PUD amendment and Re-Zoning would not be pursued, and use of APN-009 would be limited to only those uses permitted in the City's Agricultural District zoning.

APN-006, the approximately 4.39-acre property that was not a part of the prior 1982 Oak Creek Apartment project PUD, is not affected by the PUD's provisions or conditions of approval. The General Plan land use designation and zoning for the parcel allows for a variety of housing types ranging from single dwellings to multi-unit structures, with densities ranging from 8.1 to 18 dwelling units per acre. At a maximum density of 18 units per acre, the gross 4.39-acre site at APN-006 could accommodate as many as 79 new residential units. At a minimum, the site could accommodate 35 units.

Alternative #3A - Redistributed Density as Single-Family Lots

Alternative #3A involve a re-zoning of parcels APN-006 and -009 to a new PUD zone for a single-family residential development, and shifting units from the -006 parcel to the -009 parcel, as well as clarifying revisions to the Oak Creek Apartment PUD. Rezoning to conventional R3 zoning might also serve to accommodate the described Alternative. A Lot Line Adjustment, Tentative Parcel Map or Tentative Subdivision Map, as well as Site Plan and Architectural Review would also be required. The density of up to 79 units spread over APNs -006 and -009 would yield a density of 5.1 units per gross acre, which is below the 8.1 units per net acre minimum density of the current Medium Density Residential land use category. However, a General Plan Amendment does not appear necessary as General Plan Policy 1-P-4 states that an exception to the minimum density may be considered in the case where minimum development yield is constrained by a pre-existing PUD. Should the decision makers prefer, Alternative

#3A could include a General Plan Amendment either designating the development area to a lower residential density, or designating sensitive portions of APN-009 to Open Space (although alternative means of removing environmentally sensitive lands from the development area exist, such as retaining these areas within the Oak Creek Apartments PUD to the point where the development area density calculation attains 8.1 dwelling units/net acre).

Alternative #3B: Redistributed Density as Apartments

Alternative #3B would involve a re-zoning of parcels APN-006 and -009 to a new PUD zone for townhome or apartment development, shifting units from the -006 parcel to the -009 parcel, as well as clarifying revisions to the Oak Creek Apartment PUD. Rezoning to conventional R4 zoning might also serve to accommodate the described Alternative #3B. A Lot Line Adjustment, Tentative Parcel Map or Tentative Subdivision Map, as well as Site Plan and Architectural Review would also be required. The density of up to 79 units spread over the 15.45 net acres of developable portions of APNs -006 and -009 would yield a density of approximately 5.1 units per gross acre, which is below the 8.1 units per net acre minimum density of the Medium Density Residential land use category. However, a General Plan Amendment does not appear necessary as General Plan Policy 1-P-4 states that an exception to the minimum density may be considered in the case where minimum development yield is constrained by a pre-existing PUD. Should the decision makers prefer, Alternative #3B could include a General Plan Amendment designating certain more sensitive portions of APN-009 to Open Space (to the point where the development area density calculation attains 8.1 dwelling units/net acre).

Alternative #4 - Reduced Project

Alternative #4 is based on the overall development potential of the site that can be accommodated by the design capacity of Graylawn Avenue under the City's "livable streets" standard. Pursuant to the Street Standards for the City of Petaluma, local residential roadways, such as Graylawn Avenue, are intended to carry up to a maximum of 2,000 average daily tips (ADTs), serving up to 200 dwellings. Graylawn Avenue currently carries approximately 954 ADTs, and thus has a maximum remaining capacity of 1,046 ADTs before exceeding the design standards. Using the conversion ratios presented in the Transportation chapter of this EIR, the 1,046 daily trips of remaining capacity equates to approximately 149 residential units.

This alternative is dependent upon an amendment to the 1982 PUD provisions, which currently limit the development potential of APN-009. Under the 149-unit development program of this Alternative, the restricted APN-009 parcel would receive an increased development potential of 70 units (149 units - 79 units from APN-006) over the 1982 PUD restrictions.

Environmentally Superior Alternative

Each of the alternatives do not include an at-grade rail crossing and do not generate traffic at levels that would contribute to exceeding the City of Petaluma Street Standards design capacity for Graylawn Avenue (sometimes referred to as the "livable streets" standard), and thus are environmentally superior to the Project. Each of Alternatives 2, 3A, 3B and 4 would meet this definition of being environmental superior to the Project. The environmentally superior alternative must therefore be selected from among these alternatives, so the environmentally superior alternative is defined as the alternative that would avoid or reduce environmental effects to the greatest extent.

Alternative #2 would result in new development on the APN-006 property only, and would thus develop the least amount of undeveloped land. As a result, Alternative #2 would reduce or avoid many of the biological resource impacts of the other two alternatives (e.g., wetlands fill, tree removal, loss of

riparian habitat). Alternative #2 (along with Alternative #3B) would also generate the least amount of new traffic and would produce less air quality emissions as compared to the other alternatives. However, Alternative #2 would not be considered the environmentally superior alternative, because it does not achieve the central objective of realizing flood control improvements through the terracing as directed through the City's General Plan or of implementing the River Plan and creating the river trail. The City of Petaluma's decision-makers may conclude that on balance, one of the most important environmental consideration for development of this site is the ability of this property to contribute toward the City's flood management policies and regulations intended to lower flood flow water surface elevations and to help remove properties from the 100-year flood boundary to the greatest extent possible in accordance with the General Plan. If this environmental consideration were primary, then Alternatives #3A, 3B, and #4, which involve the APN-009 riverfront property that is subject to, and that would implement the City's flood management and river access and improvement policies and regulations, are superior.

Alternative #3A, as a single-family residential development, would occupy essentially the same development footprint as does the Project, and would likely not enable design opportunities to arrange new development on the site in a manner that could further avoid protected trees, avoid direct removal or filling of wetlands, or avoid noise and vibration impacts associated with the train.

Of the two remaining Alternatives (#3B and #4), Alternative #4 would result in more dwelling units and thus more cars, but its traffic and air quality impacts would be less than significant. Alternative #4's assumed land use type of higher-density apartment complex uses would likely enable design opportunities to arrange new development on the site in a manner that could avoid protected trees, avoid direct removal or filling of wetlands, and avoid noise and vibration impacts associated with the train. Alternative #4 (with terraced grading) would also come closest to attaining many of the Project's basic objectives, including:

- providing for new, relatively high-density residential development within the City of Petaluma's current Urban Growth Boundary (UGB), thereby reducing pressure to expand the existing UGB to support future residential development;
- adding to the City's stock of available multi-family housing; and
- implementing provisions of the Petaluma River Access and Enhancement Plan by improving flood control capability and increasing public access to and enjoyment of the Petaluma River.

Alternative 4, inclusive of the river terrace, would avoid many of the Project's unavoidable impacts (primarily by not including the Shasta Avenue at-grade crossing), would reduce the level of impacts under all other environmental categories as compared to the Project (primarily due to the reduced density), and would realize a majority of the Project's objectives.

Alternative 3B would avoid most of the Project's unavoidable impacts (primarily by not including the Shasta Avenue at-grade crossing), and would reduce the level of impacts under all other environmental categories as compared to the Project (primarily due to the reduced density). Alternative #3B (and Alternative #2) would generate the least amount of new traffic, would contribute the least amount of traffic to Graylawn Avenue, and would produce less air quality emissions as compared to the other alternatives. Alternative #3B would also result in a smaller development footprint than Alternative #4, thereby providing greater opportunities to reduce or avoid many of the biological resource impacts of the other alternatives (e.g., wetlands fill, tree removal, loss of riparian habitat). Therefore, Alternative #3B, inclusive of the River terrace grading, is identified as the environmentally superior alternative.

Although environmentally superior, Alternative #3B would achieve to a lesser degree, many of the Project's basic objectives:

- Alternative #3B would provide for new, relatively high-density residential development within the City of Petaluma's current Urban Growth Boundary (UGB), but it's substantially reduced number of units (79, total) would not reduce pressures to expand the existing UGB to support future residential development to the same extent as the Project, or as Alternative #4.
- Alternative #3B would add to the City's stock of available multi-family housing, to the same extent as the Project, or as Alternative #4.

Although it is assumed for this EIR that Alternative #3B would implement the provisions of the Petaluma River Access and Enhancement Plan by improving flood control capability and increasing public access to and enjoyment of the Petaluma River, it is not certain that the substantially reduced development potential of this Alternative could reasonably support the financial costs associated with terraced grading. The same development potential as Alternative #3B (79 units) could also be achieved on the APN-006 parcel only (i.e., Alternative #2), where the City's terraced grading requirements would not apply.

3

Project Description

Project Location and Context

Project Site and Vicinity

The Project site is located nearly 1 mile directly north of downtown Petaluma in the Payran/McKinley area, southwest of Highway 101 and between the Petaluma River and Petaluma Boulevard North. The Petaluma River forms the Project site's northeastern boundary, and the Sonoma-Marin Area Rail Transit District (SMART) railroad tracks form the site's western boundary.[1] A portion of the right of way for the planned Rainier Cross Town Connector abuts the northern most limit of the Project site, between the SMART corridor and the River. The Linda del Mar subdivision of the Payran neighborhood lies to the south, and the existing Oak Creek Apartments located at the northern terminus of Graylawn Avenue are directly to the southeast.[2] Further to the northwest and along Petaluma Boulevard is the Petaluma Village Premium Outlet shopping mall. West of the SMART tracks is a single-family residential neighborhood located along Shasta Avenue (see **Figure 3-1**).

Prior to 1975, the Project site and surrounding property supported a dairy farm operation. The property is now vacant and covered with grasslands, scattered mature oaks and eucalyptus trees. The Project site slopes downward from the off-site Cinnabar Hill (which is located directly to the west and northwest of the Project site and on the west side of the SMART railroad tracks), to the banks of the Petaluma River. Existing conditions at the Project site are illustrated in the aerial photograph (see **Figure 3-2**).

Portions of the Project site lie within the Petaluma River floodway and the Federal Emergency Management Agency's (FEMA) designated 100-year floodplain.[3]

Access to the Project site is limited due to its location immediately west of the Petaluma River and east of the SMART tracks. The only existing access to the Project site is via Graylawn Avenue from Payran Street. Graylawn Avenue intersects at Payran Street approximately 500 feet east of the SMART railroad tracks. Bernice Court, a small cul-de-sac branching off Graylawn Avenue, also offers the possibility of limited access to the Project site, as the Project site has approximately 32 feet of frontage at the terminus of Bernice Court.

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1 The Sonoma-Marin Area Rail Transit District (SMART) assumed title of the rail right-of-way from the Northwestern Pacific Railroad Authority in March 2004. The North Coast Railroad Authority now holds a freight easement over the right-of-way, and reinitiated freight service in 2011. Passenger rail service (SMART) began full passenger train service on August 25, 2017.

2 The Oak Creek Park Apartments project was approved as a PUD by the City in 1982 and is fully built and occupied.

3 FEMA Flood Insurance Rate Map (FIRM), effective February 2014

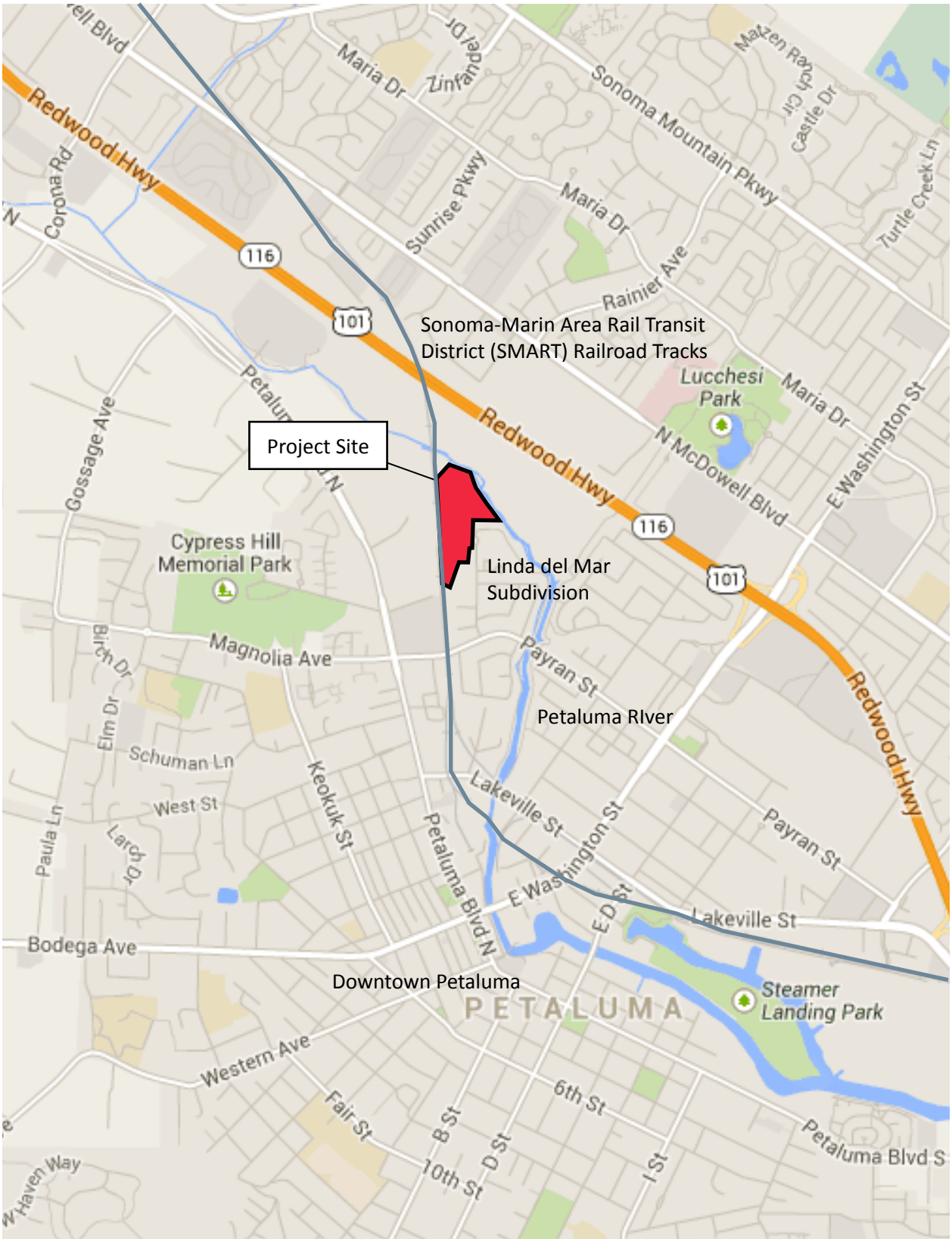

Figure 3-1
Project Location and Vicinity

Source: Google Maps

Figure 3-2
Project Site and Surroundings

Source: Google Maps

All Involved Lands

Several abutting properties have an association with the proposed Project site. Together, these properties are termed "All Involved Lands". All Involved Lands together comprise 77.71 acres (see **Figure 3-3**), and all are owned by the Project applicant. All Involved Lands include:

- The Project site comprises 19.24 gross acres. The Project site is made up of 14.33 acres that are the west-of-the-River portion of the Parcel Map #307 Remainder Parcel (principally being the APN[4] 019-010-009), together with a 4.39-acre parcel known as the Webb parcel in reference it is former owner (being APN 019-010-006), which together total 18.72 acres. The 0.52-acre Graylawn Avenue turnaround (being APN 019-010-008) is also a part of the Project site, though encumbered by an Offer of Dedication to the City (pursuant to the prior TPM #307), with a General Plan designation of Roadway and Open Space.
- All Involved Lands include 49.03 acres (being APNs 007-390-005 and 136-100-025) which are the east-of-the-Petaluma River portion of the 63.36-acre PM #307 Remainder Parcel. This east-of-the-Petaluma River area is only involved with the Project in that it is proposed to be divided from the 14.33-acre west-of-the-River portion of that Remainder Parcel by the proposed vesting tentative parcel map. The Project retains this east-of-the-Petaluma River area as a Remainder Parcel; no development is proposed east of the River.
- All Involved Lands also include 9.44 acres that comprise the existing Oak Creek Apartments complex (APN 019-010-007). No physical development is proposed within the existing Oak Creek Apartments complex; it is involved because the text of the Oak Creek Apartments Planned Unit Development must be amended to accommodate the proposed Project, because the Project proposes minor shifting at its northeastern property line, and because the Project proposes River terracing work at its northern end.

Existing Land Use Designations and Zoning

General Plan Sub-Area

All Involved Lands are within the Payran-McKinley General Plan subarea. The subarea consists primarily of residential uses, with a diversity of housing densities including single-family dwellings, townhomes, apartments, and senior housing options. The subarea is also described as containing a network of open spaces along the Petaluma River and tributary creeks; the expressed intention is that these open spaces be developed with greenways and trails while preserving riparian corridors that convey water. It states that where feasible, the creation of flood terraces will help control flooding as well as provide habitat restoration and protection of remnant wetland corridors.

General Plan Land Use Designations

Most of the Project site has a General Plan land use designation of Medium Density Residential (MDR), permitting a housing density within the range of 8.1 to 18 dwelling units per net acre (see **Figure 3-4**).

[4] Assessor's Parcel Number (APN)

Figure 3-3
All Involved Lands

Source: Google Maps

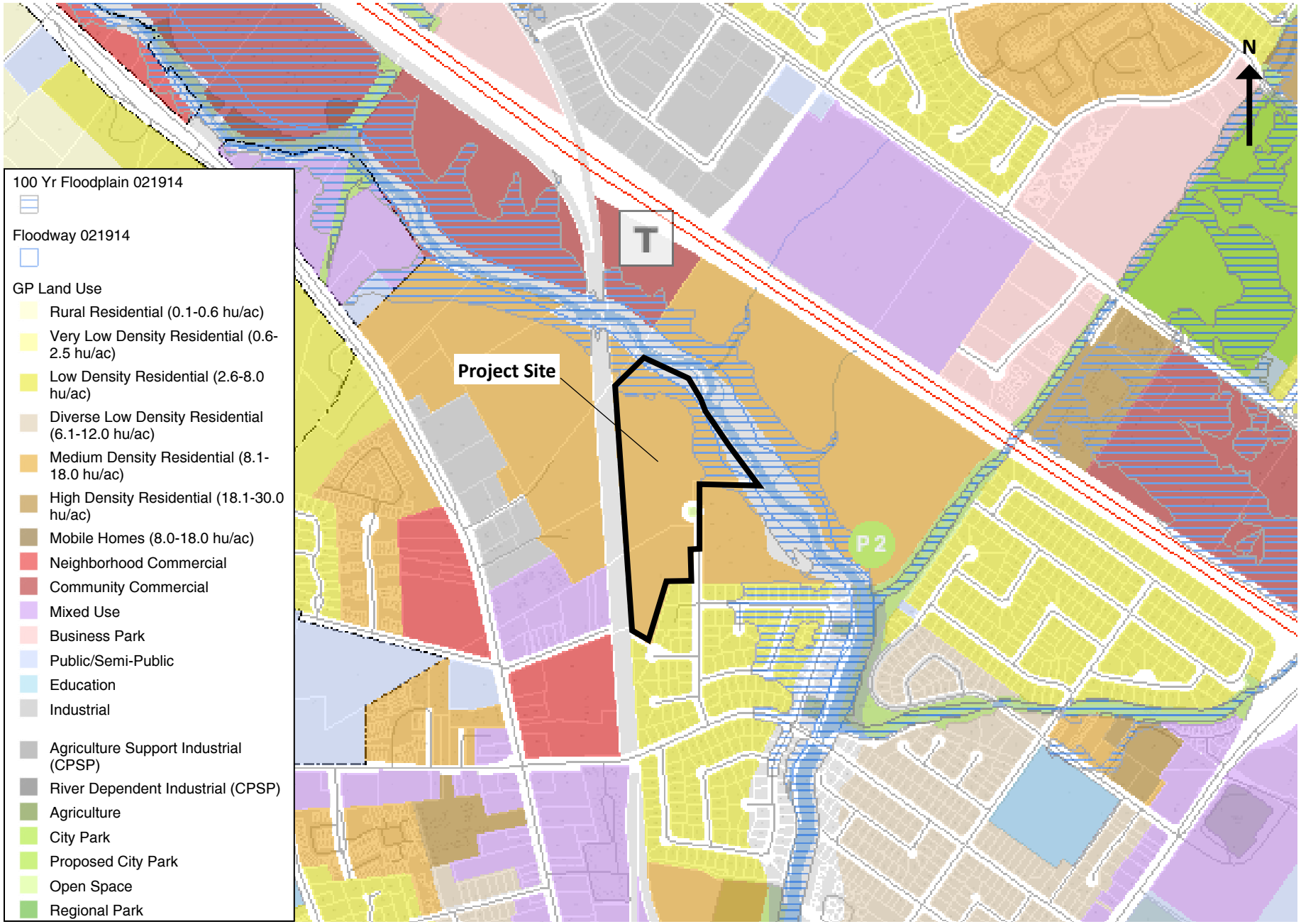

Figure 3-4
General Plan Land Use Map

Source: City of Petaluma, https://xara1-4.cityofpetaluma.net/jsviewers/gplanduse/

Approximately 2.02 acres of the Project site along the Petaluma River is designated Floodway; this is the channel of the river and the adjacent areas necessary to discharge the base flood as mapped by FEMA. Since the Floodway is an extremely hazardous area due to the velocity of floodwaters, no encroachments are permitted within the Floodway lands, and lands within the Floodway designation have no development potential. Just inland of the Floodway designation are two overlay designations of Floodplain and River Plan Corridor. The Floodplain consists of lands that are subject to periodic inundation; in a 100-year storm event, the Floodplain area models as inundated. The River Plan Corridor designation (also referred to as the Petaluma River Corridor and the PRC within the General Plan) is defined as those areas needed for implementation of the *1996 Petaluma River Access and Enhancement Plan* (River Plan), and to provide for future floodplain management projects. Development is not permitted within the Petaluma River Corridor[5].

The 0.52-acre APN 019-010-008 that is the Graylawn Avenue landscaped turnaround consists of two General Plan designations; the circular landscaped area is designated as Open Space, and the street itself appears as Roadway (the roadway is encumbered by an Offer of Dedication to the City pursuant to prior TPM #307).

Zoning

Existing zoning for the Project site consists of several different districts (see **Figure 3-5**), as described below.

R4 (Residential 4) Zone

The R4 zone applies to APN -006, which is currently vacant. The R4 zone identifies areas intended for a variety of housing types ranging from single dwellings to multi-unit structures. Densities range from 8.1 to 18 dwelling units per acre. The R4 zone is consistent with and implements the Medium Density Residential land use classifications of the General Plan. R4 Development Standards include a minimum 10-foot front, street side, and rear setback, a 60% maximum lot coverage, a 35-foot height maximum, 300 square feet of usable open space per unit requirement, and a parking standard consisting of 1 parking space per bedroom (so long as the resulting number is at least 1.5 parking spaces per unit).

Planned Unit District (PUD)

A PUD zone established in 1982 applies to APNs -007, -008 and -009. APN -009 is currently vacant. APN -008 is developed as the landscaped turnaround terminus of Graylawn Avenue (and is encumbered by an Offer of Dedication and open space and roadway designations). APN -007 is the site of the existing Oak Creek Apartments.

[5] The General Plan generically maps the width of this Corridor as 200' from river centerline (gray dashed line at Fig 3-7 labeled as 200' setback). As the purpose of the PRC is to contain the area needed for implementation of the River Plan, its area has been mapped specifically for the Project site to incorporate the Preservation, Restoration and Buffer Zones specified by the River Plan, which are necessary to implement the River Plan. The corridor, consisting of three management zones of the River Plan and referred to as the Petaluma River Plan Corridor, is mapped at Figure 6-6, and is the actual area of the PRC at the Project site.

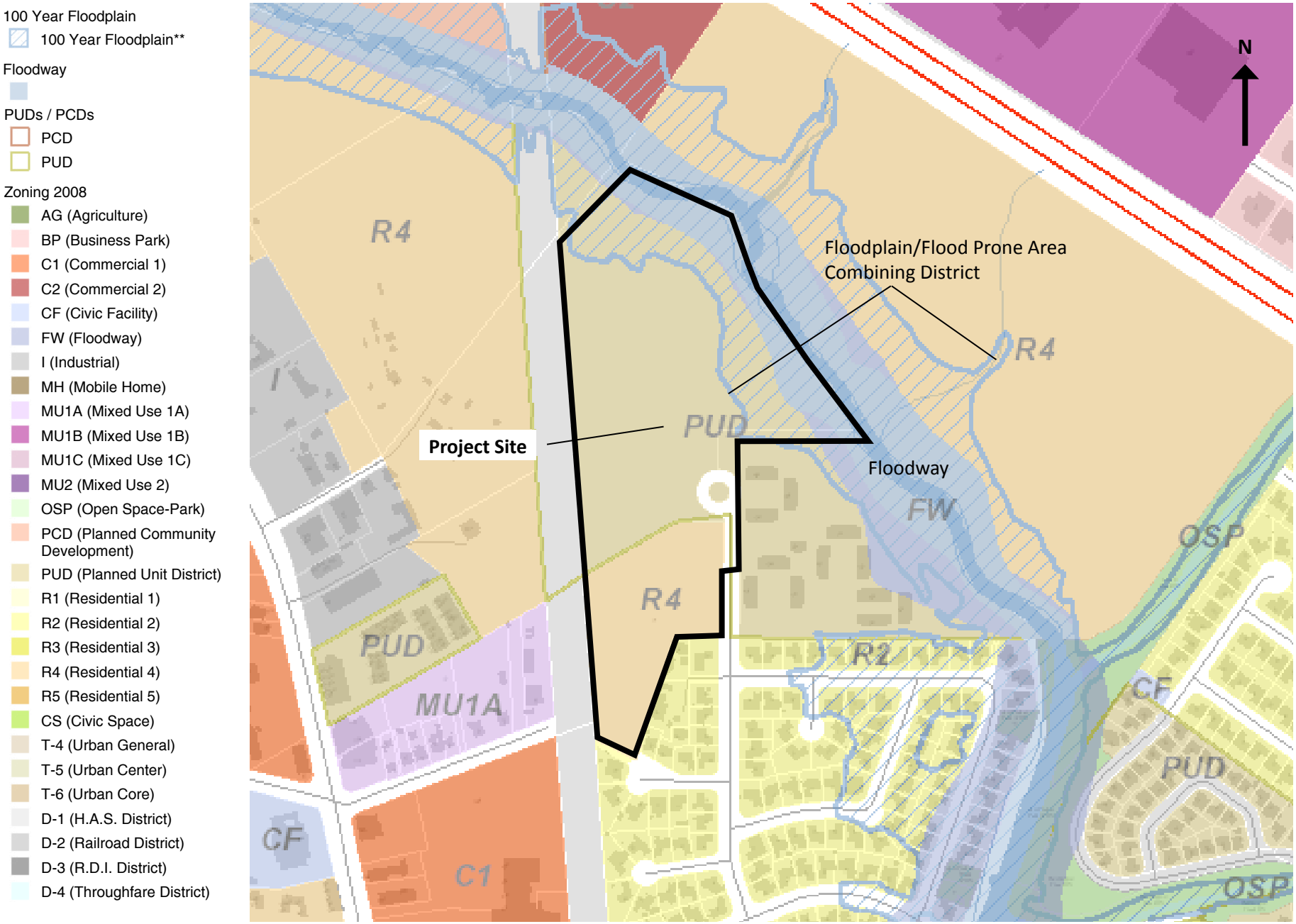

Figure 3-5
Zoning Map

Source: City of Petaluma, https://xara1-4.cityofpetaluma.net/jsviewers/zoning/

In December of 1982, the City of Petaluma approved Resolution No. 9628, authorizing a PUD Development Plan for the 76-unit Oak Creek Apartments project, which established the apartments on an approximately 6.5-acre portion of the 17.56-acre PUD area. According to the 1982 resolution, the City found that the Oak Creek PUD Development Plan "clearly results in a more desirable use of land and a better physical environment than would be possible under any single district or combination of zoning districts." In addition to approval of the Oak Creek Apartments project, that PUD included conditions that specifically pertain to the remaining vacant land included in that PUD, now part of the Project's proposed development site. Those conditions included, but were not limited to the following:

- "Use of the . . . vacant portion of the site [i.e., APN -009] shall be limited to uses permitted in the Agricultural District as specified in the Zoning Ordinance."
- "All major accesses to future development in the remaining vacant property in the vicinity of the project [e.g., the vacant 14.33-acre APN -009] shall be from the Rainier Avenue extension or other new public street, rather than from streets to the south such as Graylawn Avenue and Burlington Drive."
- "All existing on-site oak trees shall be permanently preserved."

Floodway (FW)

The Floodway (FW) zoning designation encompasses the channel of the Petaluma River and the adjacent land area that must be reserved to adequately discharge the base flood (or 100-year flood) without cumulatively increasing the water surface elevation more than one foot. All areas within the boundaries of the "Areas of Special Flood Hazard" and identified as "Floodway" areas are zoned FW. Since the floodway is an extremely hazardous area, generally no encroachment of new development is permitted within FW zone. The FW zone applies to the approximately 2.02 acres of APN -009 fronting the Petaluma River.

Flood Plain/Flood Prone Area – Combining District (FP-C)

Areas of Special Flood Hazard that are outside the boundaries of the Floodway (FW zone) are zoned Flood Plain-Combining zone (FP-C). Land zoned FP-C is subject to the regulations of the underlying zoning district (in this case, the PUD zone) with the addition of special provisions of the FP-C zone. The FP-C zone requires that any permitted principal use, accessory use, or conditional use shall require a development permit, and that any new residential construction or substantial improvement of any residential structure within the FP-C shall have the lowest habitable floor elevated at least 12 inches above the level of the base flood elevation as specified on the Flood Insurance Rate Map.

Furthermore, a zero-net fill policy covers the area along the Petaluma River west of the freeway and upstream of the Payran Street Bridge. The zero-net fill policy requires a minimum of two feet clearance above the base 100-year flood elevation for finished floors, and no (zero) net fill for any proposed development activity.

Project Description

The proposed Sid Commons project includes a PUD Amendment, Zoning Map Amendment, Vesting Tentative Parcel Map, and Site Plan and Architectural Review to accommodate construction of a 278-

unit apartment project[6] over the Project's 15.45 net developable acres. The subheadings below provide further specifics on each requested entitlement.

PUD Amendment

The Project application includes a proposed Amendment to the 1982 Oak Creek Apartments PUD, which governs the northern portion of the Project site (particularly APN -009).

More specifically, the proposed PUD Amendment would modify the Oak Creek Apartments PUD by removing the northern portion of the Project site (the vacant APN -009) from the Oak Creek Apartment PUD and by eliminating or modifying conditions from the original PUD approval that pertain to and restrict use of the northern portion of the Project site (the vacant portion of the Oak Creek PUD; APN -009), including:

- The stated prohibition of uses other than those permitted in the Agricultural zoning district
- The stated restriction that access to new development not be from Graylawn Avenue, but be from a new Rainier Avenue extension or other new public street (as described below, the Project proposes Graylawn Avenue be used as one of the primary access routes to the site)
- The stated restriction that all existing on-site oak trees be permanently preserved

The Oak Creek Apartments PUD will remain and apply to the 76-unit Oak Creek Apartments site (existing APN -007 and any minor modification to the parcel).

Zoning Map Amendment

The applicant proposes a Zoning Map Amendment to rezone the vacant area of the Oak Creek Apartments PUD (APN -009) to Residential 4 (R4), consistent with the existing Medium Density Residential General Plan designation of the Project site and consistent with the existing R4 Zoning of the southern portion of the Project site (APN -006).

This Rezoning would allow residential development at densities consistent with the Medium Density Residential land use designation set forth in the General Plan, at a range from 8.1 to 18 dwelling units per net acre across the full net developable Project acreage (15.45 acres as shown below at Table 3-1).

Rezoning APN -009 to R4 would result in a consistent R4 zoning across the entirety of the Project site and development of the Sid Commons Apartment complex would be subject to those zoning standards (in addition to Site Plan and Architectural Review approval).

Vesting Tentative Parcel Map

The Project includes a proposed vesting tentative parcel map across the 77.71 acres of "All Involved Lands" (see **Figures 3-6**) to divide the west-of-the-River portion of the Parcel Map #307 Remainder Parcel (principally being the APN 019-010-009) from the east-of-the-River portion of the Parcel Map #307 Remainder Parcel (APNs 007-390-005 and 136-100-025) and to realign some Project site parcel lines to align with the Project's proposed design.

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[6] The Project's 278 housing units would result in an anticipated permanent population of 723 persons (2.60 persons per unit x 278 proposed units = 723 persons. 2.60 persons per household based on Census 2010, Fact Sheet, City of Petaluma).

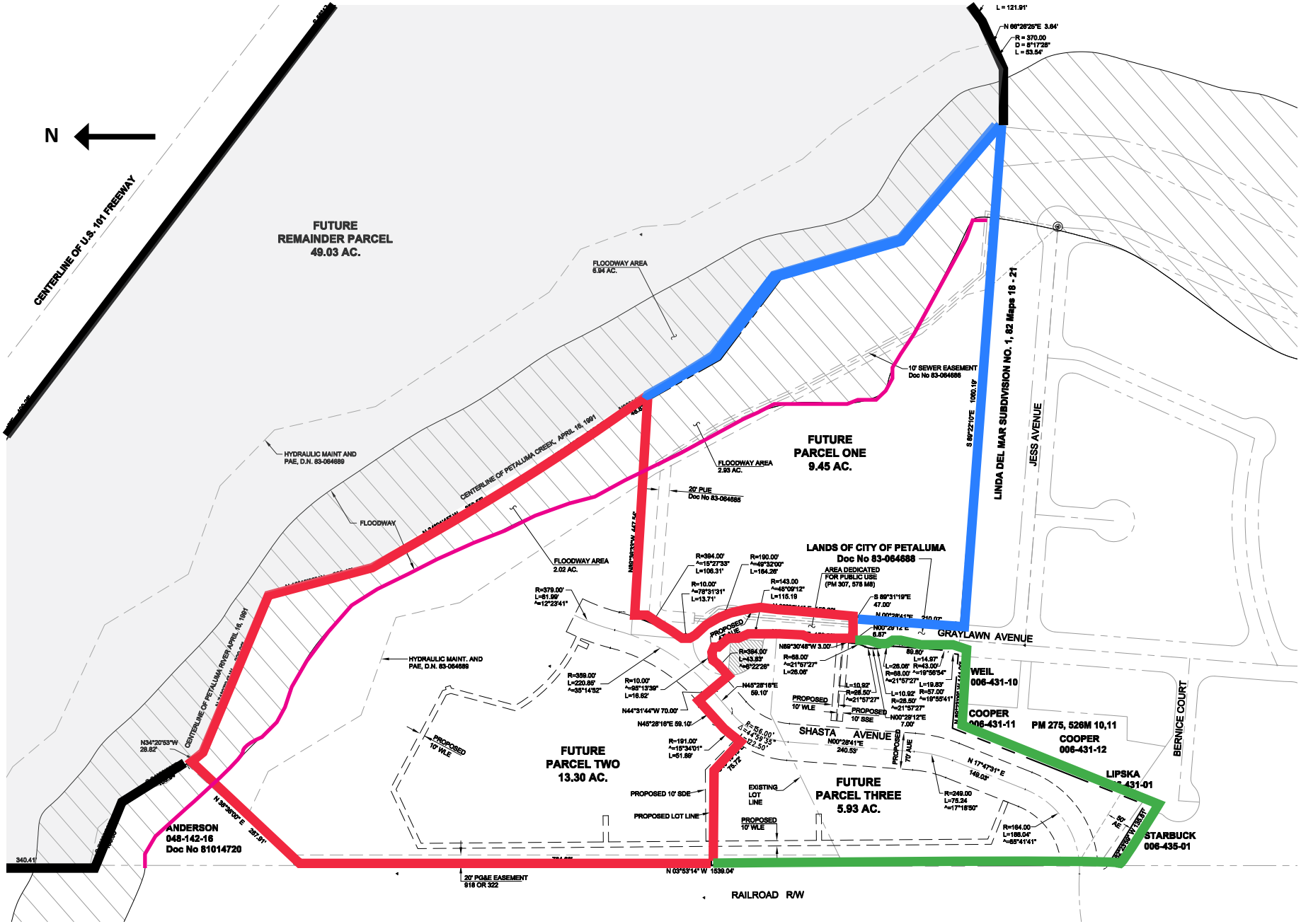


Figure 3-6
Proposed Parcel Map

Source: CSW/Stuber-Stroeh Engineering Group, 8/6/15

The proposed parcels are:

- Proposed Parcel 1: The Oak Creek Apartment property (APN -007), with minor reconfiguration along its northwesterly boundary in the area of the landscaped Graylawn Avenue turnaround (for a total of 9.45 acres);
- Proposed Parcel 2: The northern area of the Project Site, including the portion of the TPM #307 Remainder Parcel on the west side of the Petaluma River (current APN -009), less its southern extent (which is proposed to shift to Parcel 3). Parcel 2 is proposed to be approximately 13.3 acres. As currently drafted, Parcel 2 is proposed to include a portion of the private terminus of Graylawn Avenue (APN -008);
- Proposed Parcel 3: The southern area of the Project Site, and comprising the existing APN -006 (i.e., the Webb parcel), but enlarged in size to 5.93 acres, by the addition of the southern portion of current APN -009. As currently drafted, Parcel 3 is proposed to include the largest portion of the private terminus of Graylawn Avenue (APN -008); and
- Proposed Remainder Parcel: The east-of-the-River portion of the existing TPM #307 Remainder Parcel (APNs 007-390-005 & 136-100-025), totaling approximately 49.03 acres.

Proposed Parcels 2 and 3 would comprise the Project's proposed 15.45 net acre (19.23 gross acre) Project site, as shown in the following **Table 3-1**. The Project's proposed Vesting Tentative Parcel Map (subject to administrative approval) is anticipated to be refined to relate precisely to the Site Plan approved as part of SPAR.[7]

[7] While a Parcel Map is proposed, it is not required. The Project could instead be developed after recordation of a Lot Line Adjustment, shifting the existing parcel division line between APN -006 and APN-009 north to the river, resulting in one 15.45 net acre parcel for the Project site, and one remainder parcel on the east side of the River.

Table 3-1: Existing and Proposed Parcels and Net Development Area

Existing Layout		Proposed Tentative Map [2]				
Existing Parcel	Acres [1]		Gross acres	Floodway	Access Easements	Net Dev. Area
APN 007-390-005 & 136-100-025	49.03	Remainder lands	49.03	Property east of Petaluma River		
APN -007	9.44	Parcel 1	9.45	Developed 1982, Oak Creek Apts.		
Project Development Site:						
APN -009	14.33	Parcel 2	13.30	2.02	0.69	10.59
APN -008 [3]	0.52					
APN -006	4.39	Parcel 3	5.93	0	1.07	4.86
subtotal	**19.24** [4]		**19.23**	**2.02**	**1.76**	**15.45**
Total	**77.71**		**77.71**			

Notes:

1. Acreage per Parcel Map #307, filed on Book 578 Maps, pages 8 through 11, on lands owned by J. Cyril Johnson Investment, Corp., September 1997

2. Acreage per proposed Sid Commons Vesting Tentative Map, CSW/Stuber-Stroeh, Sheet C2, August 6, 2015

3. APN-008 (0.52 acres, terminus of Graylawn) is encumbered by an Offer of Dedication to the City (TPM #307) and by GP designations of roadway and Open Space. There is no development potential without City Council action to Vacate the Offer of Dedication and a GP Amendment if the landscaped island were proposed to be removed. The current draft TPM depicts the 0.52 acres to be divided between the Project site (proposed Parcels 2 and 3) and the Oak Creek Apt parcel (APN-007). As the Project now proposed to retain -008 as a landscaped turn-around and roadway, the TPM will presumably be revised so that -008 is not divided among Parcels.

4. 18.72 acres, excluding the 0.52 area APN-008

Site Plan

The Project includes a conceptual site plan for the Project site that includes a 278-unit apartment complex within three-story structures, along with a community clubhouse and an outdoor swimming pool, located on the approximately 15.45-acre net developable portion of the Project site (**Figure 3-7**). Four types of residential apartment buildings (A – D) and a clubhouse are included as part of the conceptual submittal, see example elevation at **Figure 3-8**. These conceptual elevations are intended to be subsequently refined for formal application for Site Plan and Architectural Review (SPAR) review. While the arrangement of the site plan is anticipated to be refined during the subsequent Site Plan and Architectural Review process, this EIR analyzes the conceptual site plan consisting of 278 residential units within multiple 3-story buildings.

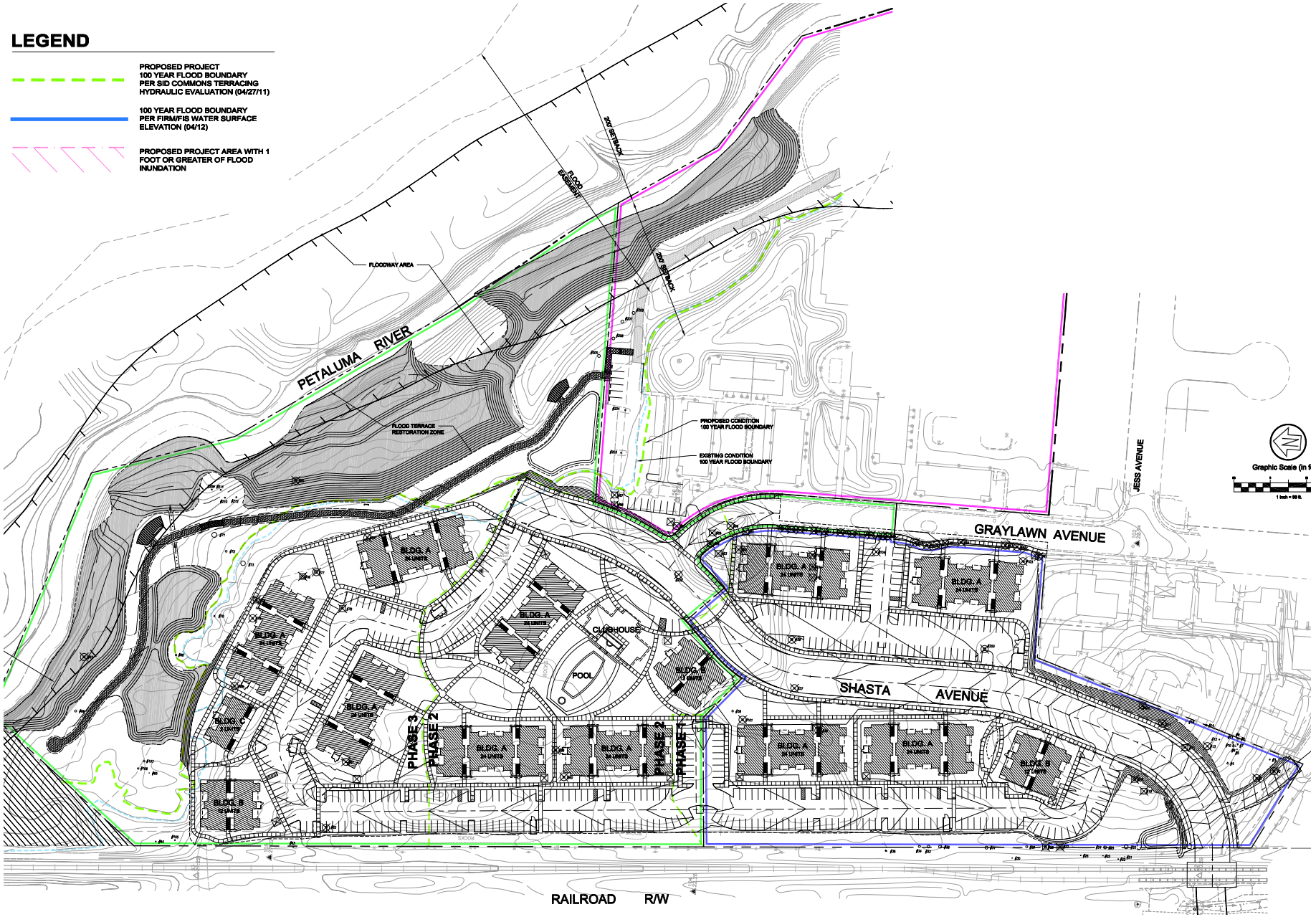


Figure 3-7
Proposed Site Plan

Source: CSW/Stuber-Stroeh Engineering Group

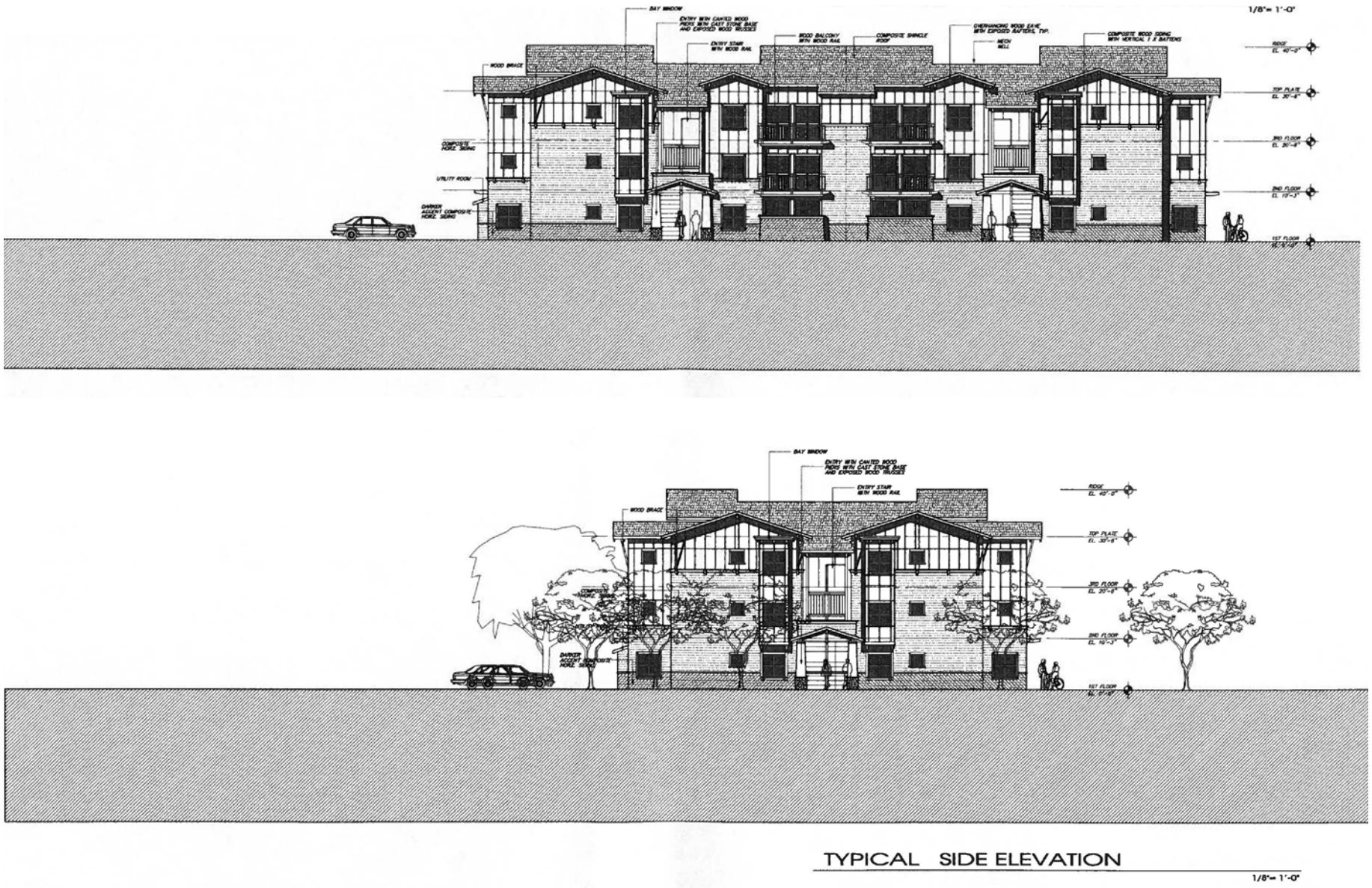


Figure 3-8
Proposed Building Types, Example Elevations

Source: Hoover Associates Architects

To serve these new residential units, parking is proposed to satisfy the Zoning Ordinance requirement. The conceptual site plan provides for 445 outdoor surface parking spaces throughout the site. This amount of parking reflects a ratio of 1.6 parking spaces per dwelling unit, and slightly more than 1 parking space per bedroom, satisfying the relevant parking requirement at Section 11.060 (Table 11: Dwellings-Multiple Household) of the City of Petaluma Implementing Zoning Ordinance (IZO).

The Project Description and this document's environmental analysis are inclusive of the following project components that are not explicitly shown on the conceptual site plan:

- The riverside trail shown on the plan set shall extend the full width of the project site, extending from the northwest property line and extending onto the Oak Creek Apartment's APN -007 the short distance necessary to connect to the existing Oak Creek Apartment's riverside trail.
- A public sidewalk/trail shall extend from the Graylawn Avenue sidewalk to the riverside trail.
- The land within APN -008, being the landscaped turnaround and the roadway around it, shall remain in place. A project entry may come off the existing roadway. Therefore, no General Plan Amendment is necessary to amend the roadway and Open Space designation on the parcel and no vacation of the irrevocable offer of dedication is necessary.

Project's Relationship to Floodway, Floodplain and River Setbacks

Floodway

The FW zone applies to the approximately 2.02 acres of APN -009 that fronts onto the Petaluma River. As indicated by the floodway outline on **Figure 3-9**, the Project does not propose any new inhabited structure within the Floodway. Creation of a flood terrace and one river overlook (a bench on a landing) is proposed within the Floodway.

Existing Flood Easement

There is an existing 400' wide hydraulic maintenance and public access easement recorded in 1998 (83064689) on Parcel Map #307. It is referred to as the Flood Easement in Figure 3-9. The centerline of the easement is generally east of the centerline of the Petaluma River. On the Project site, the Floodway lies entirely within this easement.

As indicated on Figure 3-9, the Project does not propose any structure within the Flood Easement. The work proposed within the Easement, consisting of flood terracing, habitat restoration, construction of the river trail and installation of an overlook, are all consistent with the hydraulic maintenance and public access description of the easement.

200' River Setback

Pursuant to Petaluma General Plan policy 8-P-30, a 200-foot setback is established from centerline of the Petaluma River.

As indicated by the black dashed line on Figure 3-9, the residential Project maintains the 200-foot setback, and no development (other than river related improvements) is proposed within the 200-foot River Setback.

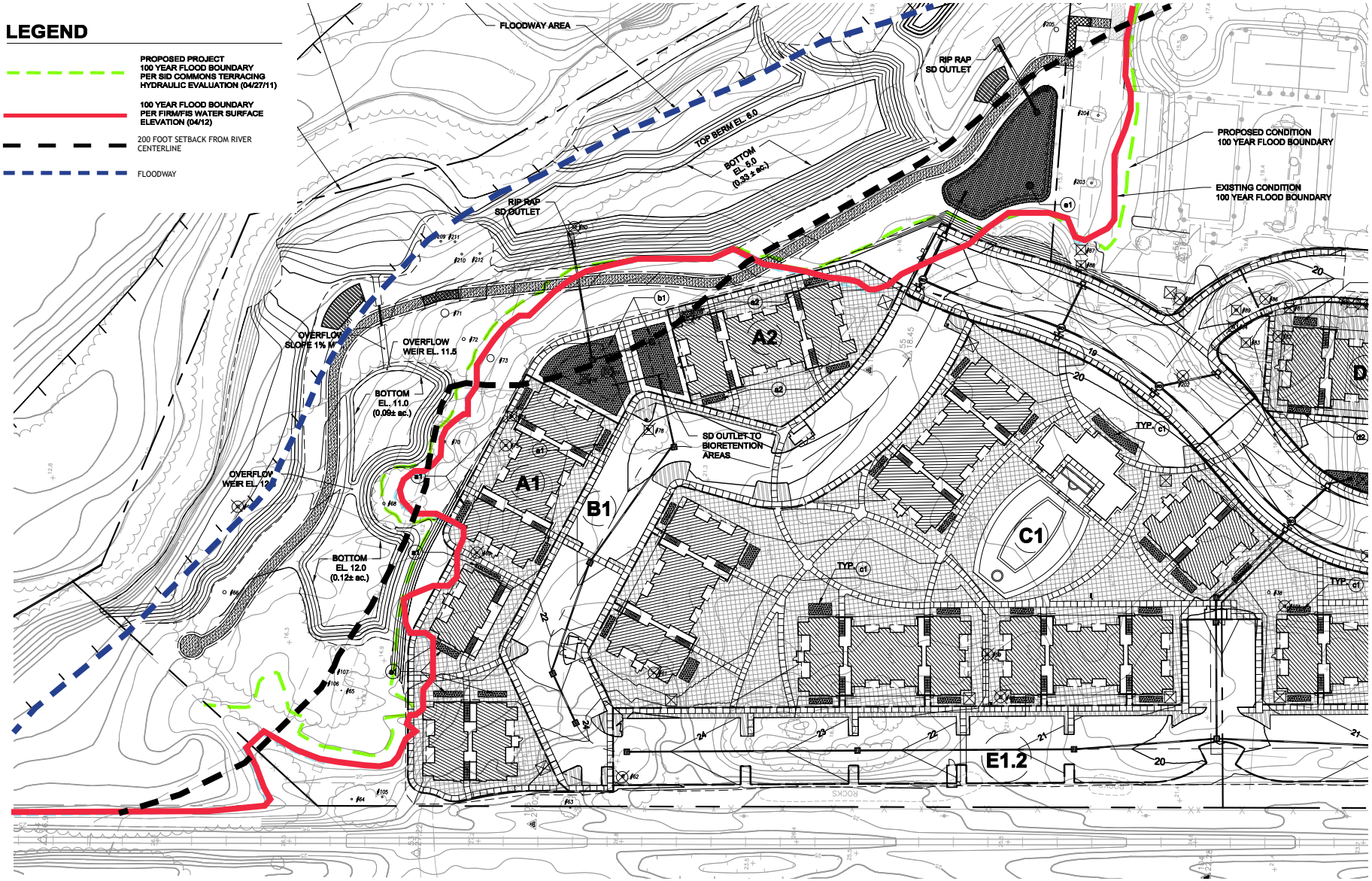


Figure 3-9
Project's Relationship to Floodway, Floodplain and River Setbacks

Source: CSW/Stuber-Stroeh Engineering Group, May 1, 2017

100-Year Floodplain

FEMA distributes Flood Insurance Rate Maps (FIRMS) that are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including the 100-year flood zone. Pursuant to Petaluma General Plan Policy 8-P-37, no new inhabited structure or development shall be entitled within that 100-year flood zone area (unless that flood depth is less than 1 foot and Residential development is prohibited on the first floor and any non-residential finished floors is at least two feet above the base 100-year flood elevation).

As indicated on Figure 3-9, the Project does not propose any inhabited structure within the currently effective 100-year flood boundary as established per FIRM/Flood Insurance maps dated February 2014.

Zero Net Fill

Pursuant to City General Plan Policy 8-P-33, the City implements a mandatory zero net fill policy for lands within the 100-year flood elevation of properties upstream of the Payran weir. This requirement is further established under Chapter 6 section 6.070 of the Implementing Zoning Ordinance.

As indicated on Figure 3-9, the Project's proposed Grading Plan does not propose to place any new fill or structure within the Petaluma River 100-year flood elevation (see also the discussion regarding the Project's proposed Terracing Plan, below).

Petaluma River Plan Corridor

The General Plan's River Plan Corridor land use designation (alternatively referred to as the Petaluma River Corridor and the PRC within the General Plan) identifies areas determined to be needed for implementation of the 1996 Petaluma River Access and Enhancement Plan (River Plan), and to provide for future floodplain management projects. Development is not permitted within the River Corridor. On the Project site, this Corridor is at least 200 feet from the river centerline and more specifically is comprised of the three management zones of the River Plan, those being the Preservation Zone[8], the Restoration Zone[9] and the Buffer Zone[10] specific to the Project site.

The residential Project encroaches into the Petaluma River Plan Corridor at the northern extent of the Project. (See additional discussion of this issue under the Biology and Land Use chapters of this EIR).

[8] On the Project site, the Preservation Zone is the upland driplines of the riverside Oak Grove and Riparian Woodlands (specifically oaks 105, 65, 107, 69, 75, 77, 79 and 205-208) (pursuant to River Plan Policy 14 page 77 and page 64) and the existing riverside wetland to be preserved (pursuant to the Preservation Zone definition: River Plan Glossary page 195).

[9] On the Project site, the Restoration Zone is the created river terrace and its abutting restoration areas, being also the proposed HMMP area (pursuant to Restoration Zone definition: Glossary page 196).

[10] On the Project site, the Buffer Zone extends 50 feet from mature oaks (pursuant to River Plan Policy 13j page 74, Policy 14 page77 and map page 63) and existing wetlands (Policy 14, page 77) as well as 30 feet from the created river terrace (Policy 13d page 74).

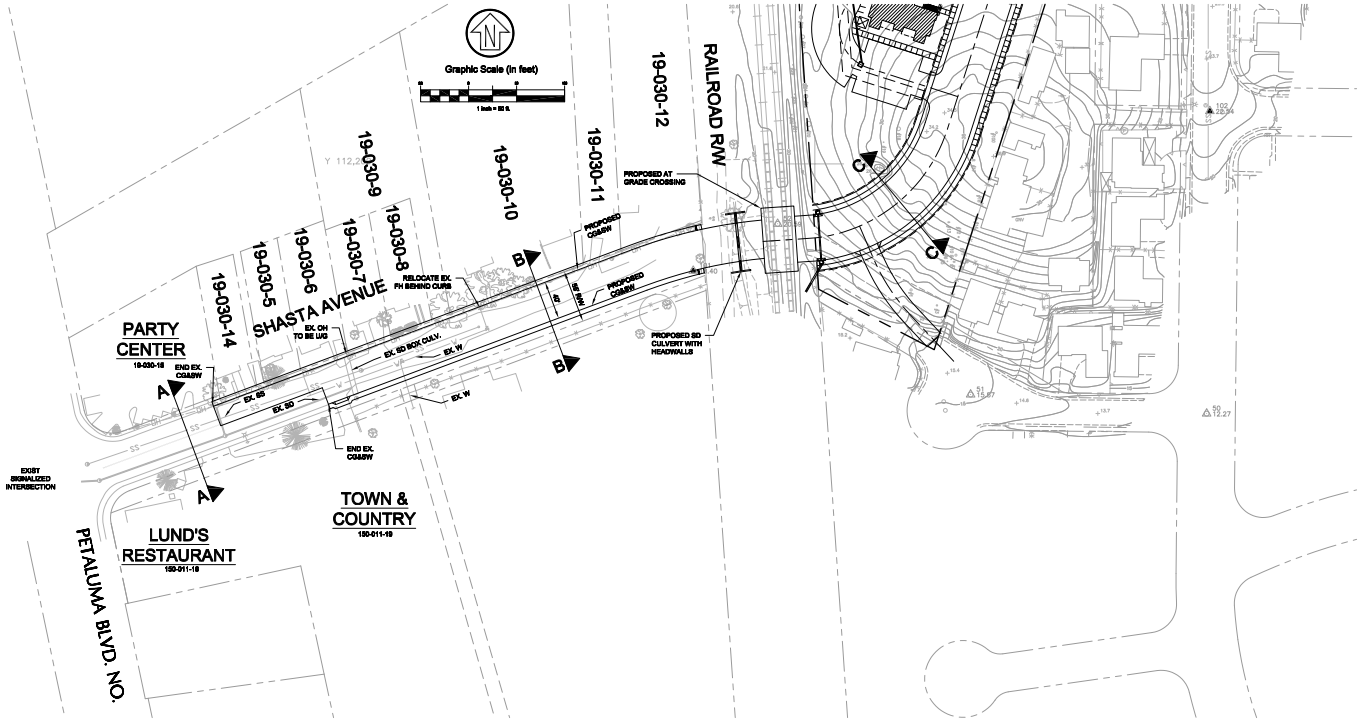
Access and Utilities

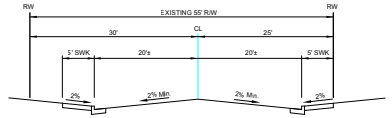
Primary access to the Project site is proposed via the existing Graylawn Avenue and by the creation of an extension of Shasta Avenue from its current terminus on the west side of the SMART railroad tracks. The Shasta Avenue extension is proposed as an at-grade crossing over the tracks and extending the roadway through to the Project site to a new connection at Graylawn. The proposed at-grade railroad crossing at Shasta Avenue would require approval by the California Public Utilities Commission (CPUC).[11] Extending Shasta Avenue through to the Project site would also require improving the existing portion of Shasta Avenue east of Petaluma Boulevard leading up to the proposed at-grade rail crossing. The extension of Shasta Avenue through the Project site is proposed as a private access and utility easement, so that a right-of-way dedication to the City would not be necessary. The Shasta Avenue Extension to connect with Graylawn is indicated as a 70-foot wide access and utility easement that includes a 48-foot wide curb-to-curb dimension, and 4 ½-foot landscape planters and 5-foot sidewalks on both sides of the street (see **Figure 3-10**). Graylawn Avenue would maintain the current 32-foot wide curb-to-curb dimension and the landscaped turnaround would remain; a 5-foot sidewalk is proposed along the east side of the Project site (the west side of Graylawn, extending north from the existing monolithic sidewalk).

An additional means of emergency access to the Project site is proposed via a public access easement at the existing approximately 32-foot wide project frontage located at the end of Bernice Court. The Bernice Court connection is intended as an emergency vehicle access (EVA) only, and not as a through street. It is designed to meet all fire apparatus, turning radius and turnaround requirements of the Petaluma Fire Code.

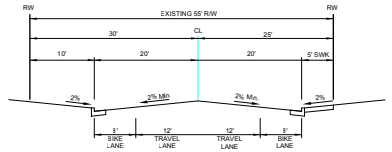
Water, sewer, electricity, natural gas, telephone and cable services are available either at or near the Project site. Serving the site will not require main extensions. Water and sewer laterals will serve the buildings and will connect to City of Petaluma systems via pipes in Graylawn Avenue and within the existing Oak Creek Apartments site. Telephone and electricity services are currently provided by overhead lines, which will be replaced at the site with underground service in a joint trench for these utilities.

[11] At-grade access over the tracks at Shasta Avenue was terminated in 1963 in exchange for a public at-grade crossing at Payran Street. A CPUC application for the proposed at-grade crossing has not yet been formally submitted by the Project applicant, pending receipt of entitlements from the City of Petaluma.

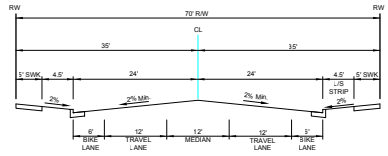




SECTION A-A
SHASTA AVENUE
EXISTING STREET SECTION
NTS



SECTION B-B
PROPOSED STREET SECTION SHASTA AVENUE
BETWEEN RAILROAD AND PETALUMA BLVD.
NTS



SECTION C-C
PROPOSED STREET SECTION
STANDARD PETALUMA COLLECTOR STREET
NTS

Figure 3-10
Proposed Shasta Avenue Extension

Source: CSW/Stuber-Stroeh Engineering Group

Grading and Drainage

Development Site Grading

The Project site generally slopes downward from south to north towards the Petaluma River. High points in the southerly portion of the site are at elevations of approximately 34 to 35 feet, dip to 15 to 16 feet in the center of the site near the existing landscaped Graylawn turnaround, and rise slightly to the top of bank of the Petaluma River at elevations of approximately 20 feet above sea level.

The proposed Grading Plan for the Project (see **Figure 3-11**) provides for a leveling of the site to accommodate new development by redistributing soil from the south towards the north. This will result in lowering an existing small hillside at the most southerly portion of the site by plus or minus 6 to 8 feet, raising the central portion of the site by approximately 4 feet, and raising the northerly portion of the site nearest to the Riverbanks by plus or minus 1 foot. The finish grade across the Project site will retain the south-to-north slope, but finish elevations will range from approximately 26 feet above sea level at the south, to approximately 21 feet above sea level at the north end of the site near the Petaluma River banks.

Based on the Project's geotechnical report, the top 1 to 8 inches of the surface soil is loose due to recent disking for weed control. Therefore, the entire site will be sub-excavated to the depth of 6 inches, the excavated area scarified to a depth of 12 inches, and re-compacted. The sub-excavated area will then be backfilled and compacted.

As proposed, the grading plan for the development site cannot be accomplished with a balance of cut and fill. Grading for the Project's proposed Petaluma River Terracing Plan (see further discussion below) would result in substantial cuts along the Riverbanks. Approximately 6,670 cubic yards (CY) of cut material from the terracing project can be redistributed onto the development portion of the site, but a net surplus of approximately 14,470 CY of material cut from the banks of the River will need off-site export, as shown in **Table 3-2**.

Table 3-2: Earthwork Quantities

Description	Cut (cy)	Fill (cy)	Net (cy)
Mass Grading	-16,000	26,700	10,700 (Fill)
Trench Spoils	-3,000	-	-3,000 (Cut)
Foundation Spoils	-3,700	-	-3,700 (Cut)
Shrinkage	-	2,670	2,670 (Fill)
Subtotal:	-22,700	29,370	6,670 (Fill)
Petaluma River Terracing Plan	-21,260	120	21,140 (Cut)
Total:	-43,960	29,490	14,470 (Cut, needing export)

Source: CSW/Stuber-Stroeh Engineering Group, Inc., Sid Commons Preliminary Grading and Drainage Plan, Sheet C4, June 26, 2017

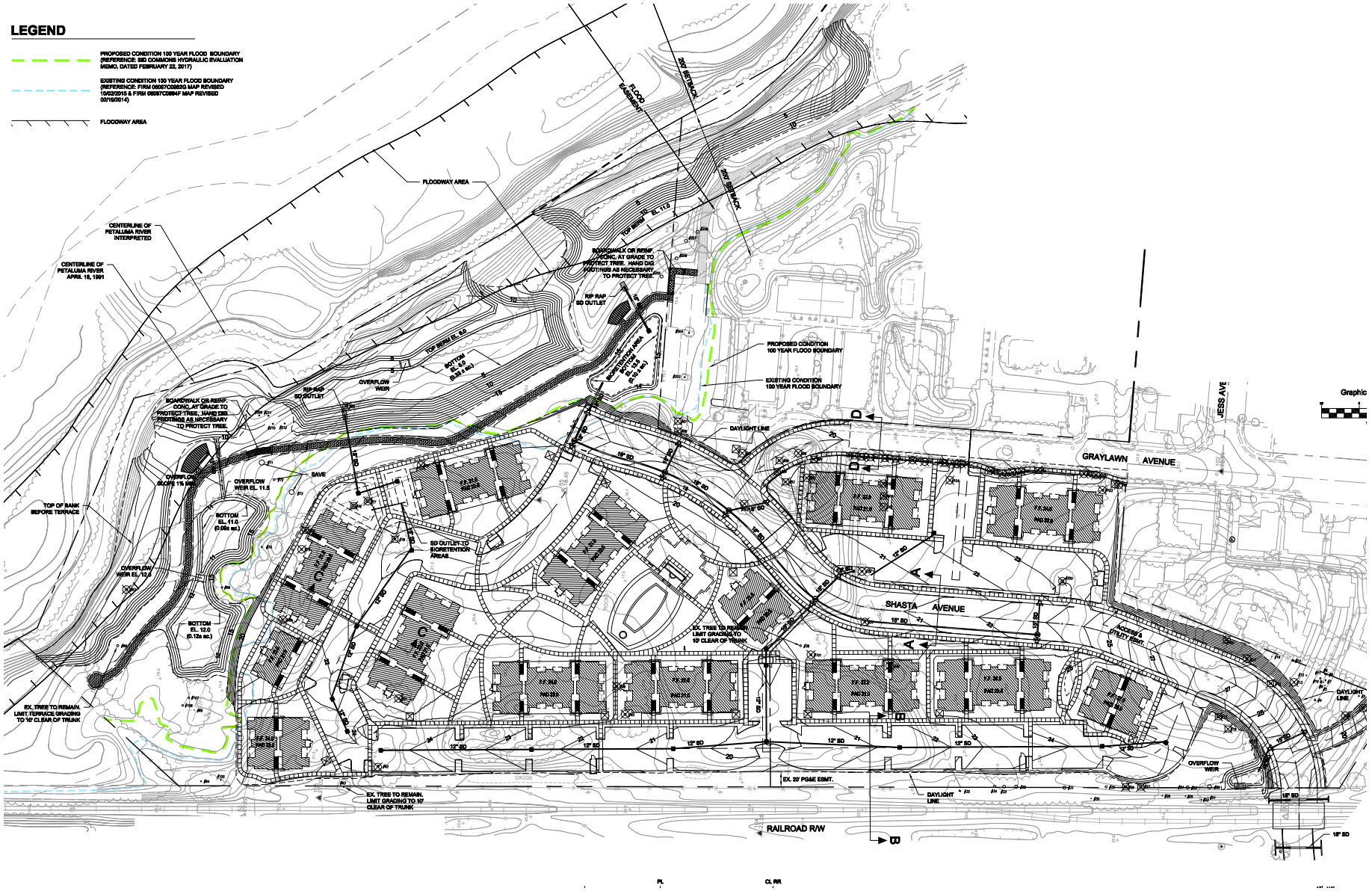


Figure 3-11
Proposed Grading and Drainage Plan

Source: CSW/Stuber-Stroeh Engineering Group, May 2017

Development Site Storm Drain Plan

Drainage from the Project site will be collected within two underground storm drain systems. One system will collect runoff from the majority of the development site into an 18-inch storm drainage pipe running below the Shasta Avenue extension. This drainage system will first discharge into a new stormwater detention/bioretention basin to be constructed north of the existing Oak Creek Apartments; then discharge via a riprap outlet into an existing wetlands area at the top of bank of the River; and from there it will seep and flow down the banks to the River. A second storm drain system will collect drainage from the most northerly portion of the development site into a 12 to 15-inch pipe located below the northerly drive aisle. This system will outfall into a new bio-retention facility located at the most northerly portion of the Project site, which will then also ultimately discharge via a riprap outlet at the lower bank of the River.

Consistent with National Pollutant Discharge Elimination System (NPDES) provision C.3, surface runoff will be directed through graded swales and bio-retention facilities to provide passive filtration where possible, and through filter inserts installed in the drainage system in areas that require direct discharge into the storm drain (see **Figure 3-12**).

Petaluma River Terracing Plan

The Petaluma General Plan Policy 8-P-28 provides that,

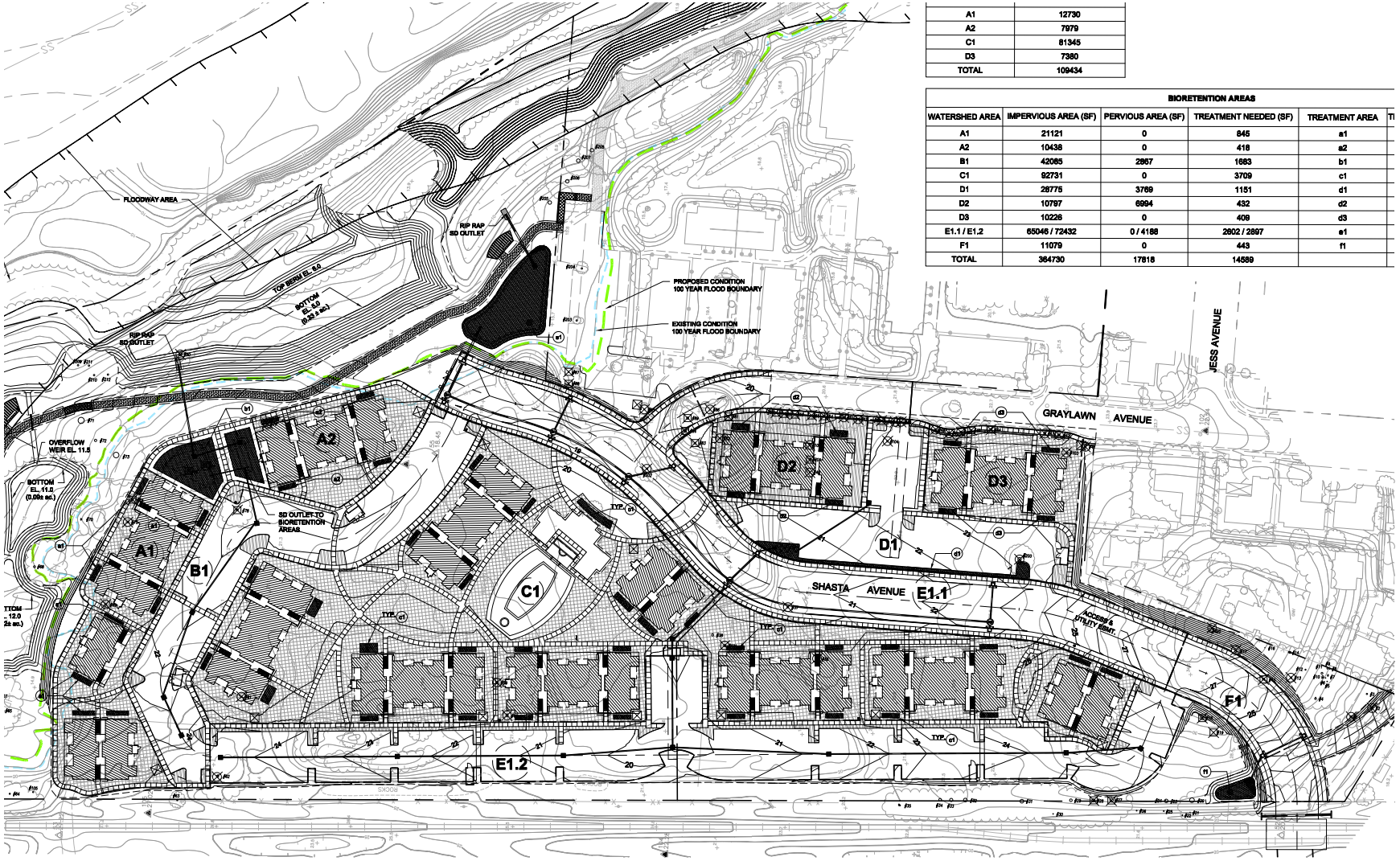
> "*The area upstream of the Corps weir and below the confluence of Willow Brook Creek with the Petaluma River, located within the 1989 FEMA floodplain (and any amendments thereto) and adjacent to the Petaluma River, shall include a Petaluma River Corridor (PRC) set aside for the design and construction of a flood terrace system to allow the River to accommodate a 100-year storm event within a modified River channel, to the extent feasible given existing physical and natural constraints.*"

Accordingly, the Project includes a Terracing Plan (designed by CSW/Stuber-Stroeh Engineering Group, Inc. and WRA Environmental Consultants) for the section of the Petaluma River bank that is located within the Project site and extending approximately 300 feet onto the Oak Creek Apartments parcel (APN -007). Terracing of the River channel is designed to maintain citywide 100-year flood conveyance in conformance with the General Plan policies, and seeks to balance the multiple goals of the Petaluma River Access and Enhancement Plan (River Plan) Policy 25, which states,

> "*In flood channel design, balance the needs for habitat restoration and natural channel configuration with the goals of flood protection and maintaining the economic viability of properties. Where modifications to the river channel are recommended, the preferred channel configuration is the schematic terraced/low flow channel (aka WESCO/PWA design). This design maximizes habitat restoration opportunities and provides a grade differential between the trail on the flood terrace and bank-top development.*"

Grading

The Project's proposed Terracing Plan provides for re-grading of the western bank of the Petaluma River to improve flood capacity and flow efficiency (see **Figure 3-13**). A terraced grading plan is proposed, separated into three areas: the lower reach terrace, the middle reach terrace, and the upper reach terrace.



A1	12730
A2	7979
C1	81345
D3	7380
TOTAL	109434

BIORETENTION AREAS					
WATERSHED AREA	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	TREATMENT NEEDED (SF)	TREATMENT AREA	TI
A1	21121	0	845	a1	
A2	10438	0	418	a2	
B1	42085	2867	1683	b1	
C1	92731	0	3709	c1	
D1	28775	3769	1151	d1	
D2	10797	6994	432	d2	
D3	10228	0	409	d3	
E1.1 / E1.2	65046 / 72432	0 / 4188	2602 / 2897	e1	
F1	11079	0	443	f1	
TOTAL	364730	17818	14589		

Figure 3-12
Proposed Stormwater Control Plan

Source: CSW/Stuber-Stroeh Engineering Group

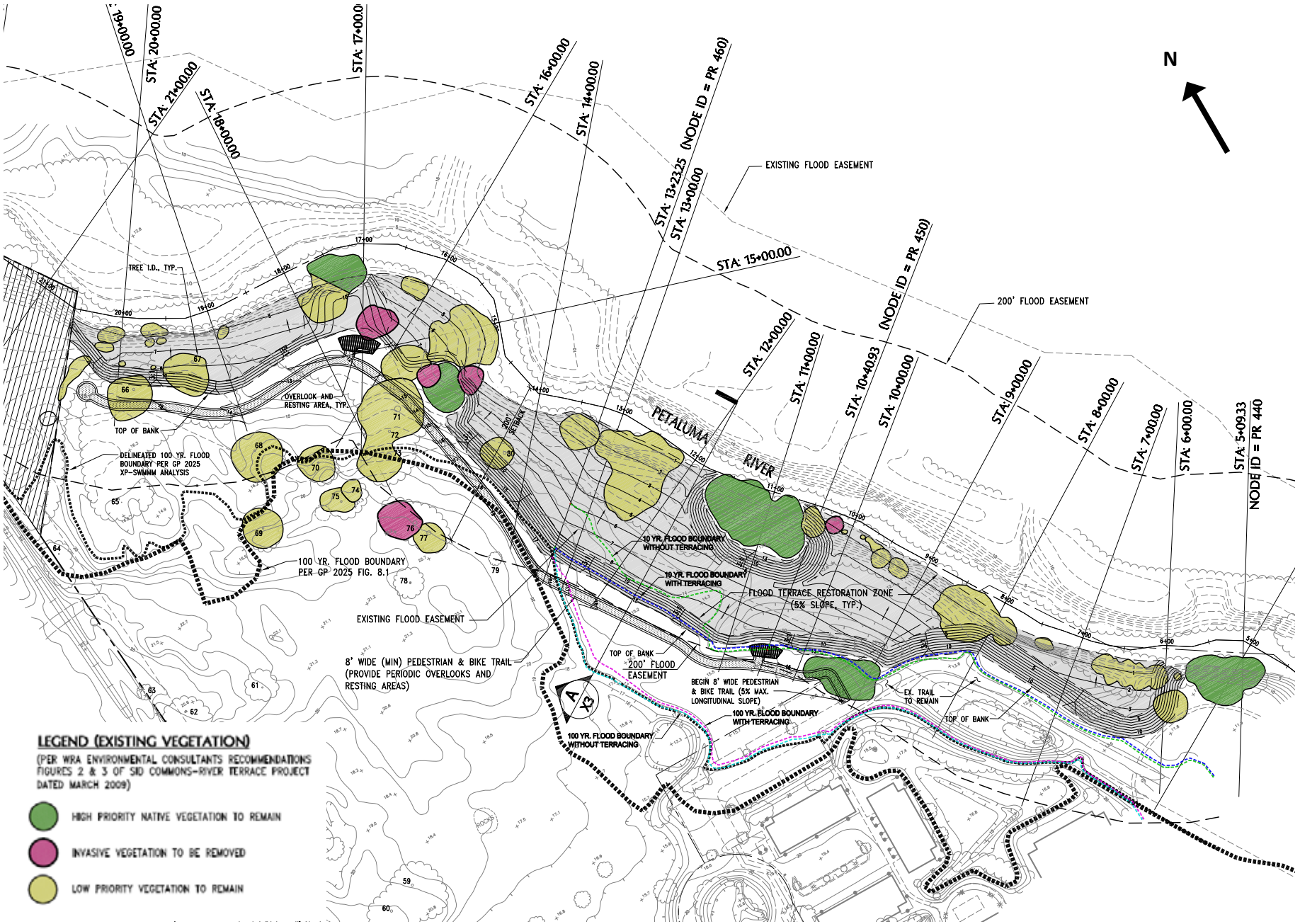


Figure 3-13
Proposed Petaluma River Terracing Plan

Source: CSW/Stuber-Stroeh Engineering Group

- The lower reach terrace is the southerly portion of the proposed terrace, separated from the upstream reaches by an area of high priority native riparian vegetation. The lower reach is also adjacent to an existing upland wetland area. Grading for the lower reach is designed to avoid grading into the high priority riparian areas and to avoid grading of the upland wetlands.
- The middle reach is located immediately upstream of the lower reach and is bound at the upstream end by a grove of trees, and the confluence of Deer Creek. Grading for the middle reach is designed to avoid affecting the grove of trees, and to create a new wetland area on the terrace bench.
- The upper reach is bound by the middle reach and the northerly boundary of the property. Grading for the upper reach is designed to avoid affecting several oak trees, and includes the creation of two new wetland areas along the flatter upland floodplain.

Grading for each of the three terrace areas generally includes a gradual (5%) slope beginning at the low-flow channel of the River and rising between 5 to 10 feet in elevation, with a steeper banked (2:1) slope meeting existing grade at the upland portion of the site. In the lower reach, this steeper bank rises in elevation by as much as 10 feet, and in the upper reach, the steeper bank has only about a 4 to 5-foot rise. An 8-foot wide pedestrian and bicycle trail meanders from the top of the new River bank into the river terrace, and is proposed by the Project to extend to both edges of the Project site boundaries. The river trail will connect to an existing riverside pathway within the Oak Creek Apartments site. Bench seating and intermittent view opportunities would be provided along the multi-use trail.

Restoration/Habitat Mitigation Monitoring Plan

A Habitat Mitigation Monitoring Plan (HMMP) has been prepared for the Project; it provides for habitat replacement and mitigation for impacts caused to riparian habitat by the river terrace grading and mitigates impacts to seasonal wetlands within the upland development area. The HMMP has been designed to accommodate the necessary grading and re-contouring of the western bank of the Petaluma River, to remove invasive monocultures of Himalayan blackberry patches, to create new floodplain terraces, to create and restore riparian habitat to provide similar beneficial functions and values, to create new perennial and seasonal wetlands habitat within the terrace as mitigation for impacted wetlands, and to revegetate the graded and re-contoured terrace area with native riparian vegetation see **Figure 3-14**.

The HMMP includes a Planting Plan for revegetation and restoration of the Riverbanks after the contoured grading is complete. Consistent with the Petaluma River Plan, the Planting Plan provides for a transitional restoration of the riverbank with new transitional habitat.

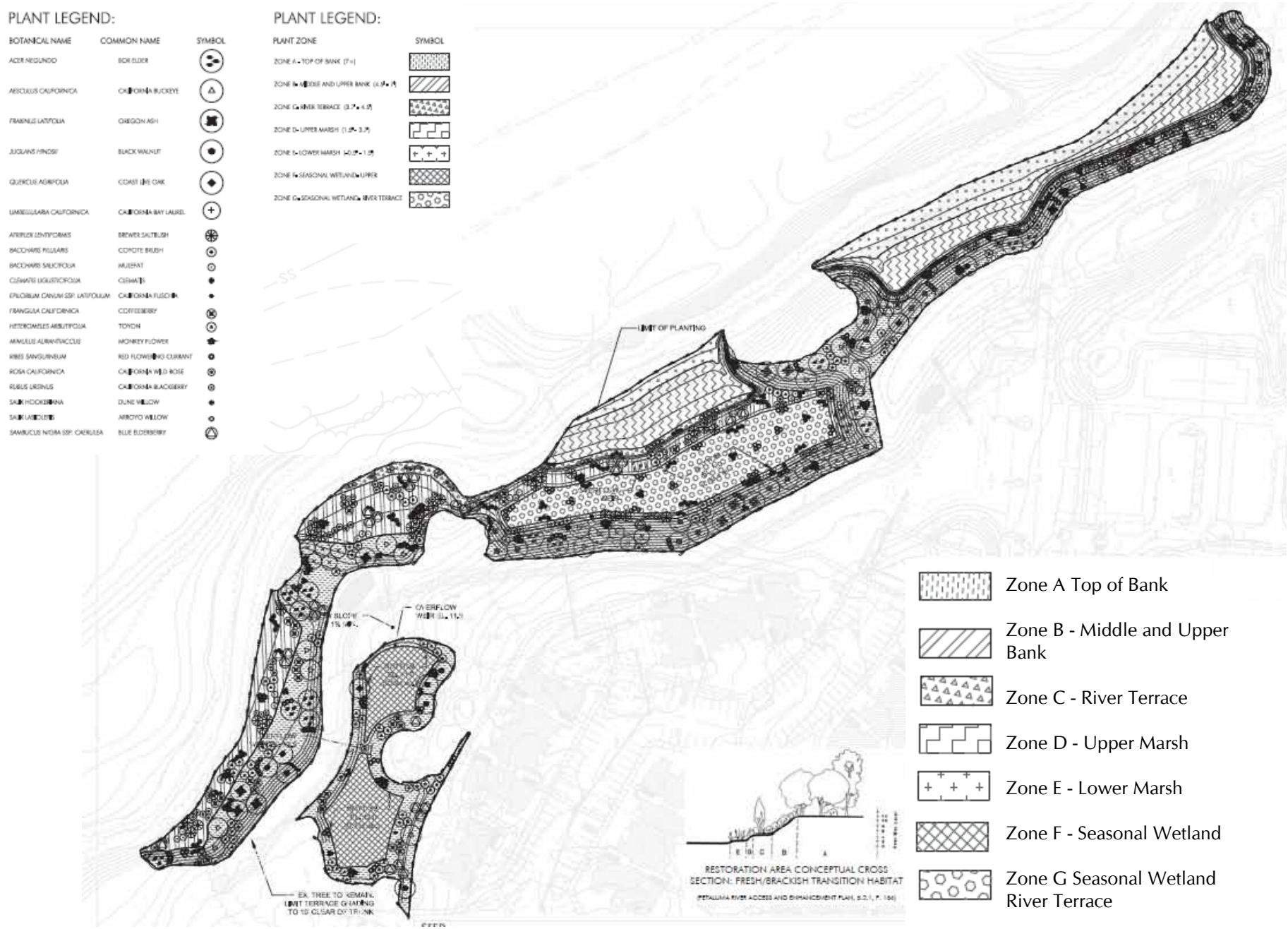


Figure 3-14
Proposed Petaluma River Terrace, Conceptual Re-Planting Plan

Source: WRA, June 2016

The transitional planting plan includes:

- Zone A at the top of bank, which will be planted with trees (e.g., box elder, California buckeye, Coast Live oak) and shrubs (coyote brush, California fuchsia, and flowering currant);
- Zone B along the middle and upper banks, to be planted with shrubs (e.g., Brewer saltbrush, mulefat, clematis, California fuchsia, California blackberry);
- Zone C within the River terraces, including shrubs (dune and arroyo willow) and grasses (common sedge and rush);
- Zone D along the upper marsh areas, planted with grasses and herbs (alkali heath and pickleweed);
- Zone E within the lower marsh areas, planted with grasses and herbs (common spikerush and bulrush tule);
- Zone F within the created seasonal wetlands on the upper terrace, planted with grasses and herbs (rushes); and
- Zone G within the seasonal wetlands created along the River Terrace, planted with shrubs (willows) grasses (rush).

The HMMP is intended to meet the environmental review requirements for this EIR (with City of Petaluma as lead agency under CEQA), and to support subsequent regulatory permit applications for the United States Army Corps of Engineers (Corps) Section 404 Clean Water Act; Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification, and California Department of Fish and Wildlife (CDFW) Code Section 1602 Notification of Streambed Alteration Agreement.

Construction

For purposes of this analysis, the Project is presumed to be developed over a 20-month construction period, where initial site preparation, grubbing, and grading are following by site development improvements and building construction:

- The Project site will be grubbed and graded to achieve the finished elevations described in the grading plan, which will entail tree and vegetation removal, and moving excess topsoil and dispersing it as fill across the Project site. Because the proposed Terracing Plan for the River corridor anticipates placement of a portion of cut material from the Riverbanks as fill within the development site, implementation of the Terracing Plan's grading operation is assumed to occur simultaneously. These activities will involve use of heavy-duty construction equipment including graders, dozers, tractors, backhoes and other heavy grading equipment. Site preparation and grading is anticipated to occur over an approximately 40-day, or 2-month period.
- Once finish grade is complete, construction of apartment buildings containing up to 278 units will be initiated. Access to the site will be constructed from existing Graylawn Avenue. The Shasta Avenue Extension (at-grade rail crossing) will be constructed, as will the Bernice Court EVA and construction of the outer loop parking lot and drive aisles. Water and sanitary sewer lines will be connected to existing mains within Graylawn and extended throughout the Project site. The Project's storm drain system will be constructed including components associated with the proposed Shasta Avenue extension, and outfall to the Petaluma River. These activities will involve use of construction equipment including trenchers, loaders, generators and forklifts, and well as construction crews using saws, hammers and other pneumatic tools. This building construction phase is anticipated to occur over an approximately 300-day, or 15-month period.

- Once the utilities are installed and the apartment buildings constructed, the final construction stage will include painting, amenities, and roadway and parking lot paving. This will entail finish grading, development of the top-of-bank multi-use trail, and site preparation and replanting of the River bank in conformance with the approved Terracing plan and all subsequent permit requirements. These activities will involve use of construction equipment including pavers, rollers and air compressors. This sub-phase is expected to occur over an approximately 40-day, or 2-month period.

An onsite staging and storage area outside of the floodplain and as far as practicable from existing residential uses will be identified and utilized during all development activity.

Project Objectives

The Project applicant has identified the following objectives for developing the Project site:

- Provide for new, relatively high-density residential development within the City of Petaluma's current Urban Growth Boundary (UGB), thereby reducing pressure to expand the existing UGB to support future residential development.
- Add to the City's stock of available multi-family housing, which currently provides approximately 13 percent[12] of the City's total housing stock.
- Create a new housing development that is proximate to community resources, recreation, retail, culture and rail service, and that promotes walkability to these destinations.
- Implement provisions of the Petaluma River Access and Enhancement Plan by improving flood control capability and increasing public access to, and enjoyment of the Petaluma River, with establishment of a multi-use trail for pedestrians and bicyclists along the River bank and within the Project site. River enhancements will be conducted in a manner that preserves the natural biological value and ecological function while balancing flood control objectives.

Consideration of the Project and Required Approvals

Project Feasibility Considerations

City staff has several concerns about the feasibility of the Project as proposed, and has repeatedly communicated those concerns to the applicant team during the environmental review process. More specifically, staff has concerns about the validity of certain assumptions underlying the Project's design, and as a result the overall feasibility, as addressed below. Despite these concerns, the City of Petaluma has agreed to continue processing the Project and to conduct the environmental review as contained in this Draft EIR.

Amending the 1982 Oak Creek Apartment PUD

Land Use Limitations

The proposed project requires modification to the 1982 Oak Creek Apartment PUD restrictions that limit use of the undeveloped portion of the Oak Creek PUD site (i.e., existing APN -009) to uses permitted in the Agricultural District as specified in the Zoning Ordinance, and approval the proposed

[12] City of Petaluma 2015-2023 Housing Element, based on 2013 data

Rezoning to R4; in order to make utilization of the existing Medium Density General Plan densities of up to 18 dwelling units per net developable acre across the proposed Project site possible. The 1982 Oak Creek Staff Reports states that the vacant land "is to remain vacant until a future rezoning occurs".

Without removal of applicable 1982 PUD restrictions and approval of a Rezoning for APN -009, there would be no development potential of the APN -009 parcel. In this case, the development potential for the Project site would be limited to the density calculations for the existing APN -006, which is not subject to the use or access restrictions of the 1982 PUD. At approximately 4.7 gross acres, the maximum density that could be achieved at APN -006 is approximately 84 units; the current Project with approximately 0.9 acres of public access easements, would permit not more than 68 units[13] (see additional discussion of this issue in the Alternatives chapter of this EIR).

Access via Graylawn Avenue

The City will need to approve removal of the 1982 PUD restriction requiring that all major access to future development of the remaining vacant property (i.e., APN -009) be from the Rainier Avenue extension or another new public street, rather than from Graylawn Avenue, in order to accommodate more than the 68 to 84 maximum units possible on the 4.7 gross acre APN -006 (APN -006 is not constrained by this PUD restriction).

According to the City's current plans as shown in the July 2014 Draft EIR for the Rainier Cross-Town Connector, if approved and constructed, the Rainier Connector would be an elevated roadway across the Petaluma River, with at-grade connections north of the Petaluma River and west of the SMART railroad tracks, only. No access to the Project site from the elevated Rainier connector is anticipated by the Project and such access is considered remote and speculative, if not infeasible[14]. The Project proposes new access via an at grade rail crossing at Shasta Avenue, but as stated below, this access is far from guaranteed.

Should the Shasta rail crossing be approved by the PUC, the current site plan depicts Graylawn operating as one of two major project accesses. Thus, the 1982 PUD restriction that all major accesses to future development of the Project site be from the Rainier Avenue extension or other new public street (e.g., the proposed Shasta Avenue extension), appears infeasible without City approval of the proposed PUD Amendment, both for units in excess of the 68 to 84 unit maximum at APN -006 with access from Graylawn and the Bernice EVA, and for the proposed Project of 278 units with access via an at-grade extension of Shasta Avenue in addition to Graylawn Avenue (see additional discussion of this issue under Alternatives Considered but not Further Evaluated, in the Alternatives chapter of this EIR).

Approval of the Shasta Avenue At-Grade Rail Crossing

The California Public Utilities Commission (CPUC) will need to grant approval for an at-grade crossing of the Sonoma Marin Area Rail Transit (SMART) tracks, with an extension of Shasta Avenue. In their 2007 letter responding to the City's NOP for this EIR (included in **Appendix 1B**), the CPUC clearly

[13] APN -006 at 4.7 gross acres, minus 0.9 acres of public access easements = a maximum density of 68 units

[14] See discussion at Alternatives chapter: Alternatives Considered but Not Further Studied, which conclude that the financial and technical challenges associated with constructing a bridge ramp that would extend through the Project site and ramp up to an intersection on the Rainier Cross-Town Connector are so substantial as to be considered remote and speculative, if not infeasible.

indicated that CPUC staff would oppose any such proposed at-grade crossing. In recent communication, CPUC staff has maintained this position. On December 4, 2015, the City of Petaluma received a response from the CPUC (David Stewart, Utilities Engineer) stating that CPUC's position of opposition to at-grade crossing at this location had not changed.

If both the Shasta Avenue extension and any over the River connection such as Rainier (which is not evaluate by this EIR) ultimately prove infeasible, Graylawn Avenue would provide the only available means of primary access to the site. However, Graylawn Avenue is designated as a Residential Street in the City General Plan. The City of Petaluma Department of Engineering's "Street Design and Construction Standards & Specifications, Street Standards Design and Application Guidelines" specifies that residential streets are only designed or intended to accommodate up to 200 total residential units, or 2,000 average vehicle trips per day. The Traffic Impact Study estimates that Graylawn Avenue is currently carrying an average of 954 vehicle trips daily. Accordingly, if the City chooses to lift the access restrictions of the prior 1982 PUD, such that Graylawn Avenue could serve as primary Project access, it would exceed the design capacity as identified by the City's Street Standards (see further discussion of this issue in the Transportation and Alternatives chapters of this EIR).

List of Required Project Approvals

Approvals and permits necessary to implementation the Project as proposed includes, but is not necessarily limited to, the following City of Petaluma and other responsible agency approvals.

City of Petaluma

- Certification of this EIR
- Approval of a Planned Unit Development Amendment to remove the current 1982 restrictions regarding use and access to the project site, as contained in the 1982 PUD approval for the Oak Creek Apartment project (City of Petaluma Resolution No. 9628, December 1982)
- Approval of a Re-Zoning of APN 019-010-009 to R4 enabling development of proposed Parcels 2 and 3 at densities of up to 18 units per net developable acre (consistent with the Medium Density Residential General Plan)
- Approval of Site Plan and Architectural Review for development of the site with up to 278 multi-family units and all associated site improvements
- Approval of Tentative Parcel Map (Oak Creek II Vesting Tentative Parcel Map, CSW/Stuber-Stroeh, February 23, 2015, updated pursuant to SPAR approved site plan) or a Lot Line Adjustment
- Approval and recordation of Final Parcel Map (or recordation of Lot Line Adjustment)
- Approval of Encroachment Permits for improvements to the public right-of-way necessary to construct the Shasta Avenue extension and allow the Graylawn Avenue and Bernice Court work;
- Issuance of a Tree Removal permit pursuant to Petaluma's Implementing Zoning Ordinance Section 17.060;
- Approval of a Stormwater pollution Prevention Plan (SWPPP), demonstrating conformance with all applicable RWQCB design standards and BMPs
- Review and approval of an Erosion Control Plan prior to issuance of a grading permit

- Review and approval of a Final Stormwater Control Plan (SWCP) with detailed calculations to demonstrate that the requirements of post-construction runoff treatment have been met in accordance with requirements of the City's Storm Water Management regulations (Municipal Code Chapter 15.80 – Stormwater Management and Pollution Control)
- Demonstration of compliance with the NPDES General Permit for the Discharge of Storm Water from Small MS4s General Permit (SWRCB 2013)
- Grading permits, building permits, and other City of Petaluma administrative permits and approvals

Other Responsible Agency Approvals

In addition to the City of Petaluma approvals and permits listed above, the Project will also need to obtain permits and approval from the following additional responsible agencies prior to implementation:

Federal

U.S. Army Corps of Engineers

All proposed discharge of dredged or fill material to the Petaluma River will require Department of the Army Corps of Engineers (USACE) authorization and the issuance of a permit under Section 10 of the Rivers and Harbors Act.

All proposed discharge of dredged or fill material occurring within the lateral extent of jurisdictional wetlands on the Project site will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act.

All proposed discharge of dredged or fill material to the Petaluma River will require Department of the Army authorization and the issuance of a permit under Section 10 of the Rivers and Harbors Act, which is anticipated to be a nationwide permit for impacts on other waters. The applicant shall comply with all the terms and conditions within the nationwide permit.

National Marine Fisheries Service

The USACE would determine appropriateness of consultation with the National Marine Fisheries Service (NMFS) for impacts on the federally listed Central California Coastal Steelhead DPS and Green Sturgeon DPS. If consultation with the NMFS for the Central California Coast California Steelhead DPS and Green Sturgeon DPS is needed, the Project applicant shall comply with all the terms and conditions required by the NMFS.

In addition, the Project will have to comply with the NPDES General Construction Permit regulations, implement a SWPPP, and implement spill prevention and controls measures, as appropriate.

Federal Railroad Administration

Consideration of implementation of a Quiet Zone at the proposed Shasta Avenue crossing

State

California Public Utilities Commission

The Project's proposed new at-grade rail crossing is legally required to obtain "Authority to Construct" approvals from the California Public Utilities Commission (CPUC).

California Department of Fish and Wildlife

Alterations to the Petaluma River streambed may require a Streambed Alteration Agreement issued by the California Department of Fish and Wildlife, pursuant to Section 1602 of the Fish and Game Code. Any substantial change or use of any material from the bed, channel or bank of the River, or any change that may substantially adversely affect existing fish or wildlife resources will require CDFW issuance of a Streambed Alteration Agreement pursuant to Fish and Game Code 1602.

Any loss or disturbance of on-site riparian vegetation resulting from development of the property will require authorizations from the CDFW (as applicable) pursuant to Fish and Game Code 1602.

San Francisco Regional Water Quality Control Board

All proposed discharge of fill material to wetlands will require State Water Quality Certification pursuant to the federal Clean Water Act (CWA), including issuance of a permit under Section 401 as issued by the San Francisco Bay RWQCB. Such certifications may be issued in connection with U.S. Army Corps of Engineer (Corps) CWA section 404 permits, or may be issued for the discharge of fill material to wetlands outside the jurisdiction of the Corps.

State Water Quality Certification pursuant to the Porter-Cologne Act as issued by the San Francisco Bay RWQCB, shall be required for any direct removal, filling or hydrological interruption to the River, or other effects on water quality.

In addition, the applicant shall comply with NPDES General Construction Permit regulations, implement a SWPPP, and implement spill prevention and controls measures, as appropriate.

Any direct removal, filling or hydrological interruption to the River, or other effects on water quality, will require State Water Quality Certification pursuant to the Porter-Cologne Act as issued by the San Francisco Bay RWQCB.

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Aesthetics

The following chapter of this EIR provides an analysis of aesthetic impacts resulting from implementation of the Project. The information presented in this chapter of the EIR has been derived from the following primary sources:

- Photo-simulated views of the Project, as prepared by the City's consultant, EnVision Design, March 2006, as well as updated photographs of the site as needed to better reflect existing conditions,
- City of Petaluma General Plan 2025, and
- Petaluma Implementing Zoning Ordinance

New development can substantially change the visual qualities and characteristics of a site within an urban area. New development can change the character of an area by disrupting the existing visual and aesthetic features that establish the identity and value of a vacant area in the minds of local residents. Over time, a new development may become a valued component of the area and enhance its identity, or it may generate dissatisfaction among local residents who might prefer the existing visual character of a vacant site to that associated with new development.

The value of any given visual feature is highly subject to personal sensibilities. One person's negative visual impression may be another's positive or beneficial visual impression. Objective or commonly agreed upon standards are difficult to establish.

Physical Setting

The urban form of the City of Petaluma is oriented north/south following the generally alignment of the Petaluma River, Highway 101, and the SMART rail corridor. The Petaluma River serves as the Valley's low point and is flanked an either side by the Sonoma Mountains and the Coast ranges. The rolling hills and topography of these features serve as important viewsheds Citywide. The River itself, associated tributaries, and riparian areas also serve as important aesthetic features within the City.

Site Description

The Project site is located north of the downtown area, adjacent to the Petaluma River and the Sonoma Marin Area Rapid Transit/Northwestern Pacific Railroad tracks. The Project site is located within the Payran McKinley planning subarea, as identified in Figure 2-1 of the General Plan. The prior development of the adjacent Oak Creek Apartments gives the immediate area a higher-density residential character.

The site proposed for development is currently vacant, following earlier agricultural use. The Project site slopes gently from the southwest to the northeast, with the lowest elevation in the direction of the Petaluma River. There are scattered oaks and shrubs throughout the site, with a concentration along the river corridor. Evidence of site disturbance is present through vehicle tire tracks and debris and trash.

The existing visual character of the site is presented in photographs (see Existing Conditions in Figures 4-3 through 4-10, later in this Chapter), taken from numerous vantage points surrounding the Project site (see **Figure 4-1** for a map of the locations from which photographs were taken). As these photographs demonstrate, the Project site is characterized generally as an open, grassy area with scattered clusters of trees and brush.

Regulatory Setting

State

California Scenic Highway Program

The California Scenic Highway Program protects scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to identified scenic highways. "Officially Designated State Scenic Highways" must have a scenic corridor protection program, or its equivalent adopted by the local jurisdiction, to preserve the scenic quality of the corridor and address land use, development density, earthmoving, landscaping, building design, and outdoor advertising, including billboards, within the corridor.

Within Sonoma County, State Route 116 west of Sebastopol and State Route 12 east of Santa Rosa are officially designated Scenic Highways. US Highway 101, which passes through Petaluma and from which the Project site can be seen, is not an officially designated State Scenic Highway. There are no officially designated scenic highways within the City of Petaluma.[1]

Local, City of Petaluma

Petaluma General Plan – Land Use and Community Design, Character and Green Building Elements

The City's General Plan 2025 Community Design, Character and Green Building Element includes goals, policies and programs aimed at protecting and enhancing the physical elements (both natural and created) that have helped shape the City's identity. Included among these are the city's setting, general distribution of neighborhoods and land uses, landmarks, special neighborhoods, open space amenities, and historical and archeological resources. The Land Use Element also includes some policies that relate to aesthetics.

Specific goals, policies and programs relevant to the Project and the Project site include the following.

GOAL 1-G-1: Land Use

Policy 1-P-2: Use land efficiently by promoting infill development, at equal or higher density and intensity than surrounding uses.

Policy 1-P-3: Preserve the overall scale and character of established residential neighborhoods.

Policy 1-P-14: Require provision of street trees, landscaping, parking and access features to help integrate land uses and achieve an effective transition between uses of disparate intensities.

[1] Caltrans. "State of California Officially Designated Scenic Routes," accessed October 9, 2014.

Figure 4-1
Project Viewpoint Locations

Source: enVision Design

GOAL 1-G-5: Petaluma River. Develop land uses in proximity to the Petaluma River than insure the restoration of the natural River corridor, provide for adequate storm flow capacities, and enable public access and stewardship.

Policy 1-P-40: An area shown as the Petaluma River Corridor (PRC), along the Petaluma River, shall be set aside for the creation of flood terraces where appropriate; preservation, expansion, and maintenance of flood storage capacity of the floodplain; habitat conservation; and public access.

Policy 1-P-43: Development shall incorporate the River as a major design focal point, orienting buildings and activities toward the River and providing water access, to the extent deemed feasible.

Policy 1-P-44: Develop the Petaluma River as a publicly accessible green ribbon, fronted by streets, paths, and open spaces, by implementing the Petaluma River Access and Enhancement Plan within the context of the PRC Design Standards.

Policy 1-P-46: New development shall acknowledge, preserve, protect, and enhance the ecological and biological health and diversity of the Petaluma River.

GOAL 1-G-7: Trees and the Built Environment. Recognize trees as a community asset, an essential element in the interface between the natural and build environment, and part of the urban infrastructure.

Policy 1-P-49: Preserve existing tree resources and add to the inventory and diversity of native/indigenous species.

GOAL 2-G-1: City Form and Identity. Preserve Petaluma's setting as an urban place surrounded largely by rural land uses and densities, agriculture and open space.

Policy 2-P-1: As depicted on the Land Use Map allow for urban development at defined densities and intensities to prevent the need to extend outward beyond the Urban Growth Boundary.

Policy 2-P-8: Require single-loaded streets along the Urban Separator and riparian corridors to ensure the creation of linear open space corridors with maximum public accessibility, visibility, and opportunities for stewardship.

The Community Design, Character and Green Building Element also outlines policies for each of Petaluma's 14 planning subareas. The Project site is located within the Payran-McKinley subarea, which is described as follows; "Bordered by Highway 101, the railroad tracks, Lakeville Street, and East Washington Street, the Payran-McKinley subarea consists primarily of residential uses and a few large vacant parcels, primarily adjacent to the Petaluma River, Lynch and Washington Creeks, and Highway 101. These lands are also constrained by limited vehicular access. As such challenges are overcome, these vacant areas could provide significant development opportunities."

GOAL 2-G-6: Payran-McKinley. Maintain and develop the area with a diverse range of residential densities appropriate to the character of this central urban neighborhood while enhancing the creek corridors.

Policy 2-P-32: Improve accessibility through the neighborhood and vacant lands by extending the street grid as opportunities arise, such as Burlington, Jesse/Rocca, Edith, or new roadways and or pedestrian/bikeways over the river/creeks.

Policy 2-P-33: Develop the Petaluma River as a publicly accessible green ribbon, fronted by streets, paths, and open spaces by implementing the Petaluma River Access and Enhancement Plan.

Policy 2-P-34: Foster connections to the river from surrounding areas and ensure that new development adjacent to the river is oriented toward it.

Policy 2-P-37: Use the Natural Environment Element, Water Resources Element and the Petaluma River Access and Enhancement Plan as tools to:

a. Implement the Petaluma River greenway[2] by maintaining setbacks.

b. Creating flood terraces where appropriate.

c. Preserving flood storage capacity of the floodplain.

d. Protecting and enhancing habitat conservation areas.

e. Protecting and enhancing oak and riparian habitat and other open spaces along the river.

Policy 2-P-38: Promote greater accessibility to the Petaluma River and vacant lands through road extensions, bikeways, and trails, including:

a. Extending Burlington Drive northward across Lynch Creek, and consider other options to extend streets through to new developments.

b. Requiring new development to be oriented to the river, and providing continuous public access to the riverfront.

Petaluma Implementing Zoning Ordinance

Hillside Protection

The primary purpose of section 16.050 of the Petaluma Implementing Zoning Ordinance (IZO) is to; "provide design direction for hillside projects in order to create development that is compatible with and appropriate for the hillside setting, and is consistent with the objectives of this chapter and the goals and policies of the General Plan." The Project is not a hillside project. The Project site is located within the lower Petaluma River valley on a large vacant parcel. Nevertheless, the visual analysis component of the section provides context and relevance to the Project site:

16.050.D. Visual Analysis. The purpose of the visual analysis is to simulate the impact of the proposed project within the context of its surroundings. When siting and designing the improvements for the project, consideration should be given to the potential visual impact of the project on community views of hillsides and ridgelines. In order to evaluate the potential impact of a project on community views, specific view platforms have been identified. When selecting a view platform(s) for the visual analysis, priority should be given to those platforms that provide the greatest community view of the project. Depending on the location and visibility of the project, a visual analysis may need to be prepared from more than one view platform. A visual analysis includes site improvements (structures, roads, driveways, etc.) and site modifications (tree removal, grading, retaining walls, fences, etc.).

16.040.Q. View Platforms. The following specific locations selected as vantage points from which field observations are made to assess the visual impact of development within the City:

a. B Street easternmost (nearest the Petaluma River) terminus

b. C Street easternmost (nearest Petaluma River) terminus

c. D Street at the Petaluma River Drawbridge

d. Lakeville Street at the Rail Depot

[2] Where the River Plan and by extension the General Plan uses the term "greenway", this document uses the more descriptive term "Petaluma River Plan Corridor" for the same area; this is the area comprised of the Preservation, Restoration, and Buffer management zones as described by the River Plan.

e. Caulfield Lane Overpass

f. Corona Road Overpass

g. Bodega Avenue from the City limit to the urban growth boundary

h. D Street in the vicinity of the City limit/urban growth boundary

i. I Street from the City limit to the urban growth boundary

j. Penry Park

k. Schollenberger Park

l. Steamer Landing Park

m. Roof of the "C" Street parking garage

n. Terminated Vistas as identified in the Central Petaluma Specific Plan (shown on SMART Code Thoroughfare Map)

Development Standards

The Project proposal to rezone APN-009 to R4 would result in a consistent R4 zoning designation for the area proposed to be developed as an apartment complex. Pursuant to section 4.020 of the IZO, the R4 Residential zone is intended for a variety of housing types ranging from single dwellings to multi-family, with densities ranging from 8.1 to 18 units per net acre. Pursuant to Table 4.9 of the IZO, the R4 Development Standards specify:

- A minimum 10 foot front, street side, and rear setback,
- A 60% maximum lot coverage,
- A 35 foot height maximum,
- At least 300 square feet of usable open space per unit.

Pursuant to Table 11.1 of the IZO:

- A parking standard consisting of 1 parking space per bedroom (so long as the resulting number is at least 1.5 parking space per unit) is specified.

Site Plan and Architectural Review

Pursuant to section 24.010 of the IZO, the purpose of City's Site Plan and Architectural Review approval process is to secure compliance with the Zoning Ordinance and to promote the orderly and harmonious development of the City of Petaluma. As related to the Project, Site Plan and Architectural Review is required for more than one dwelling unit per lot and for subdivisions with five or more single household dwellings. The following regulatory requirements of the IZO are applicable to the Project:

> **24.010.G. Standards for Review of Applications.** The appropriate reviewing body shall review the exhibits, together with the reports of the Director, and based on these documents, evidence submitted, and the considerations set forth below, may approve the project as applied for, approve the project with modifications, or disapprove the project. In taking action, the reviewing body shall consider the following:
>
> a. It is the intent of this Section that any controls be exercised to achieve a satisfactory quality of design in the individual building and its site, appropriateness of the building to its intended use, and the harmony of the development with its surroundings. Satisfactory design quality and harmony will involve among other things:

i. The appropriate use of quality materials and harmony and proportion of the overall design.

ii. The architectural style which should be appropriate for the project in question, and compatible with the overall character of the neighborhood.

iii. The siting of the structure on the property, as compared to the siting of other structures in the immediate neighborhood.

iv. The size, location, design, color, number, lighting, and materials of all signs and outdoor advertising structures.

v. The bulk, height, and color of the proposed structure as compared to the bulk, height, and color of other structures in the immediate neighborhood.

b. Landscaping to the approved City standards shall be required on the site and shall be in keeping with the character or design of the site. Existing trees shall be preserved wherever possible, and shall not be removed unless approved by the Planning Commission.

c. Ingress, egress, internal circulation for bicycles and automobiles, off-street automobiles and bicycle parking facilities and pedestrian ways shall be so designed as to promote safety and convenience, and shall conform to approved City standards. Any plans pertaining to pedestrian, bicycle, or automobile circulation shall be routed to the PBAC for review and approval or recommendation.

d. It is recognized that good design character may require participation by a recognized professional designer, such as an architect, landscape architect or other practicing urban designer and the reviewing body shall have the authority to require that an applicant hire such a professional, when deemed necessary to achieve good design character.

Tree Preservation

The City of Petaluma Tree Preservation Chapter 17 contains a number of regulations that relate to the protection, preservation and maintenance of mature trees within the city limits. The Ordinance directs that the design of every development project shall recognize the desirability of preserving protected trees to the greatest extent possible. This Chapter also establishes the replacement ratio and parameters relative to any protected tree authorized for removal. (See Biology chapter for further detail.)

Performance Standards

Chapter 21 section 21.010 of the IZO provides objective and precise measurements of the impact of nuisances, and establishes permissible limits for each types of nuisance. Pursuant to this section of the IZO, glare is a defined nuisance, governed by the following regulations:

Direct Glare. Direct glare is defined for the purpose of this Ordinance as illumination visible at the points of measurement specified in Section 21.120(B) caused by direct or reflected rays from incandescent, fluorescent, or arc lighting, or from such high temperature processes as welding, or petroleum or metallurgical refining.

a. No such direct glare shall be permitted with the exception that parking areas and walkways may be illuminated by luminaries so hooded or shielded that the maximum angle of the cone of direct illumination shall be sixty (60) degrees if the luminary is not less than six (6) feet above the ground.

b. Such luminary shall be placed no higher than the principal structure on the site if attached to said structure and, if not attached to the principal structure, no higher than twenty (20) feet unless the Zoning Administrator determines that special operational circumstances of the subject property require higher light standards.

c. The maximum illumination at ground level shall not be in excess of three (3) foot candles.

Indirect Glare. Indirect glare is defined for the purpose of this ordinance as illumination visible at the points of measurement specified in Section 21.120(B) caused by diffuse reflection from a surface such as a wall or roof of a structure.

a. Indirect glare shall not exceed that value which is produced by an illumination of the reflecting surface not to exceed:

   i. 3 foot candles (maximum)

   ii. 1 foot candle (average)

b. Deliberately induced sky-reflected glare, as by casting a beam upward for advertising purposes, is specifically prohibited without the issuance of a temporary sign permit.

River Access and Enhancement Plan (River Plan)

The Petaluma River Access and Enhancement Plan (the River Plan) adopted by the City in 1996 describes the community's vision for the Petaluma River, including riverfront uses, activities, and developments. A central feature of the River Plan is the integration of the natural and built environment, recognizing that development and public access along the river must be balanced with protection of the few remaining natural areas located along this corridor and with appropriate flood protection considerations.

Petaluma River Plan Corridor

The area comprised of the Preservation, Restoration, and Buffer management zones of the River Plan and being at least 200 feet from the river centerline is the Petaluma River Plan Corridor (described as the greenway in the River Plan). Development is not permitted within the Corridor in order to preserve existing aesthetic resources including 1) the oak woodlands and other riparian trees that mark the location of the River in contrast to the adjacent grassy fields and 2) a buffer of open grasslands that serves as a transition from riparian corridor to upland areas, in order to preserve the contrast to adjacent grassy fields described by the River Plan as the visual reference of the River's existence.

River Oriented Development Zone

The area beyond the Petaluma River Plan Corridor is the RODZ; here the River Plan directs that development is to be carefully designed to integrate with the nature landscape and river features. Direction includes: ensuring architectural interest, articulation, and detailing in building facades facing the river, considering how building scale, coverage, and clustering can best be designed to relate to the river, siting "people spaces" to take maximum advantage of river overlook, and avoiding locating parking along the river frontage. Protection and restoration of fragile habitat isolated in the RODZ such as oaks is directed whenever feasible. Landscaping in the RODZ should appear to be an extension of the riparian and upland habitat, especially in the areas closest to the river. The RODZ is applicable to properties with frontage along the River.

Impact Analysis

Standards of Significance

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), City of Petaluma plans, policies and/or guidelines, and agency and professional standards, the Project's impact would be considered significant if it would:

1. Have a substantial adverse effect on a scenic vista, views of significant landscape features, or landforms as seen from public viewing areas.
2. Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.
3. Substantially degrade the existing visual character or quality of the site and its surroundings.
4. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

Scenic Vistas

Visual-1: The Project would not have a substantial adverse effect on a scenic vista, views of significant landscape features, or landforms as seen from public viewing areas. **(Less than Significant**)

The Project site is not located within the foreground of, nor would it obstruct long-range views or vistas on community views of hillsides and ridgelines from any of the View Platforms as identified in the Petaluma IZO section 16.040.Q (see **Figure 4-2**). These View Platform locations are those that have been specifically identified as providing important community views of the surrounding hillsides and ridgelines.

The Project site can be seen from numerous other publicly accessible vantage points, including U.S. 101, Graylawn Avenue and Shasta Road. However, views across the Project site from these locations are not formally identified scenic vista.

Construction of the Project, with new buildings of a height up to 35 feet to the roof midpoint above finished grades, may block out all or portions of existing views from adjacent areas to the foothills to the south and west, and to Sonoma Mountain to the east. While Sonoma Mountain and the foothills to the south and west are significant features of the landscape, the vantage points from which views of these features would be blocked are not designated View Platforms or scenic overlooks, and are not places where people generally gather to gain views of these features. As none of these View Platforms will be affected by the proposed Project, impacts to visual resources are considered to be less than significant.

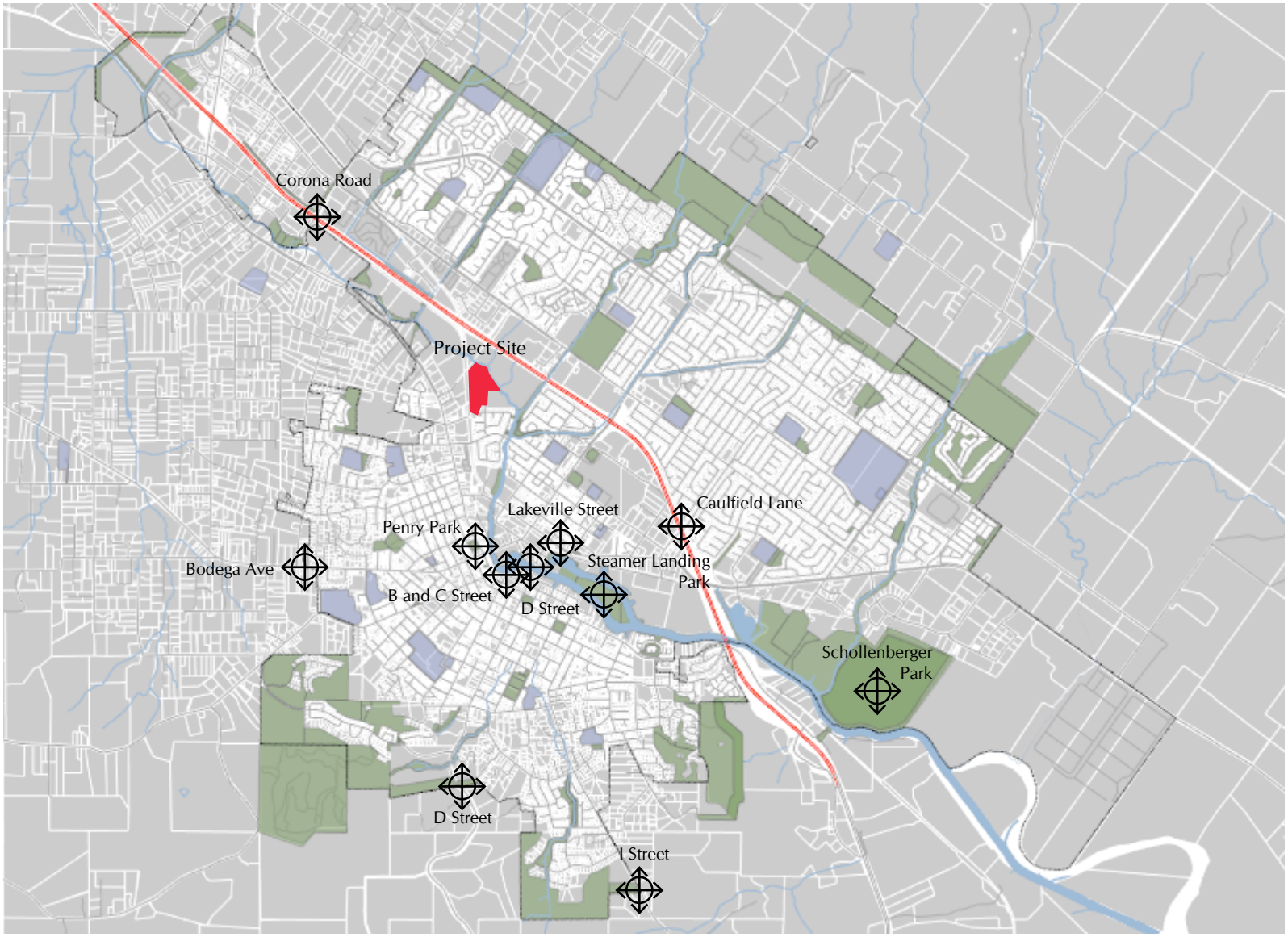

Figure 4-2:
Identified Community "Viewing Platform" Locations

Source: 16.050 of the Petaluma Implementing Zoning Ordinance

Scenic Resources

Visual-2: The Project would not substantially damage scenic resources, including trees, rock outcroppings and historic buildings within a state scenic highway, but would damage the remnant woodlands which mark the location of the River and the open field just upland of the woodlands that create the contrast and visual reference of the River by locating apartment buildings within this area. (**Less than Significant with Mitigation Measures**)

Scattered views of the Project site from Highway 101 are visible through the vegetation along the Petaluma River, and these views would be substantially changed with implementation of the Project as the 3-story structures will be visible over and between the vegetation along the Petaluma River. However, Highway 101 in the vicinity of the Project is not a designated State Scenic Highway. The Project's impacts on important scenic resources would be less than significant based on this CEQA threshold.

Preserve the Woodlands Marking the Location of the River in Contrast to the Adjacent Field (the PRPC)

Mature oaks and other trees located on the Project site would be removed to enable development of the Project (see further discussion of this issue in Chapter 7: Biological Resources). These trees and the pastoral grasslands of the currently vacant site are not formally identified as "scenic resources" of the General Plan or the lZO. However, according to the Petaluma River Access and Enhancement Plan:

"*The last remaining vestige of the Petaluma River's oak woodlands and other mature riparian trees can also be found in the Upstream Segment of the River . . . marking the location of the River in contrast to the adjacent grassy fields. These [trees and woodlands] are considered a local treasure to be enjoyed, but protected, for generations to come. The high tree canopy, found nowhere else in such abundance along the River . . . provides a visual reference of the River's existence throughout much of the valley*."

Because of the habitat's sensitivity to disturbance, the River Plan recommends, "*large preservation zones and limited public access to better protect the important plants and animals, allow natural re-growth of these magnificent trees, and recreate a bit of local natural history*."

The Project site contains these oak woodlands and riparian woodlands which mark the location of the river in contrast to the adjacent grasslands which the River Plan describes as being a local treasure that provides visual reference of the River's existence. These areas are designated as Preservation Zones (the trees) and the Buffer Zone (the contrasting grassy field, for a distance of 50 feet) by the River Plan. These zones are components of the Petaluma River Plan Corridor; which is the area needed to implement the three management zones of the River Plan and to provide for floodplain terracing. Development is not permitted within the Corridor, largely for biological and hydrological reasons, but also, as indicated above, in order to preserve existing aesthetic resources including 1) the oak woodlands and other riparian trees that mark the location of the River in contrast to the adjacent grassy fields and 2) a buffer of adjacent grassy field in order to preserve that contrast to adjacent grassy fields described by the River Plan as the visual reference of the River's existence.

As indicated in the Biology chapter of this EIR, the Project proposes construction of three apartment buildings within the Petaluma River Plan Corridor, removing certain oak trees that mark the location of the River in contrast to the adjacent grassy fields. Removal of these oak trees and construction within the Preservation and Buffer Zones does not comply with the River Plan's specified preservation of land within 50 feet from the remaining trees that mark the location of the River in contrast to the adjacent grassy fields.

Tree Removal and Replacement Relating to River Terracing

The Project also proposes a Petaluma River terracing project as directed by the General Plan, which includes re-contouring the western bank of the Petaluma River channel to improve floodwater attenuation and conveyance during floods. It is designed to preserve high priority riparian vegetation and the bulk of the oak trees in the terrace area but that will unavoidably impact riparian areas and two oak trees adjacent to the River. In support of this terracing project, the Project applicant has prepared a draft Habitat Mitigation Monitoring Plan (HMMP) addressing habitat replacement and mitigation for impacts that will be caused by the river terracing project. The draft HMMP is intended to provide for replacement of wetland, riparian and oak woodland habitat through:

- Creation of approximately 0.54 acres of new seasonal wetlands within the graded terrace floodway, designed to increase coverage by native vegetation (among other biological resource goals);
- Restoring and replacing approximately 2.08 acres of riparian habitat along the river channel and below the expanded top of bank, with an intended tree composition that will be similar to existing riparian habitat but expanded in area and no longer containing invasive non-native species such as Himalayan blackberry; and
- Replacement of removed protected trees with new trees and shrubs installed in positions within the eco-tone between the developed uplands and the riparian and wetlands habitat areas, to create a transition area and to augment existing trees to be preserved.

New plant material is intended to be native vegetation known to establish successfully within wetlands and along non-wetland waters, with native seasonal wetland plant species similar to those found in similar habitats in the region. The plant material type, size and spacing is planned to encourage quick establishment of native wetland species and discourage colonization by invasive species. The restoration goal is to establish coverage of native vegetation, and for riparian areas to re-establish at levels that match or exceed current riparian canopy coverage.

The River Plan directs flood protection projects to avoid habitat were possible and directs habitat restoration generally, however, it acknowledges that creation of a River terrace may necessitate some habitat loss. As the terrace design preserves high priority riparian vegetation, as the two oaks proposed to be removed consist of only a minor portion of the trees within the River Plan Corridor (approximately 8%), and as the River Plan Corridor will be replanted by appropriate species as specified by the Project's Habitat Mitigation and Maintenance Plan, the proposed river terracing will not result in a significant aesthetic impact on the River Plan Corridor.

Other Scenic Resource Considerations

Trees, Generally

For discussion on trees see Visual-3 and Chapter 6: Biology.

Rock Outcroppings

The December 1982 Oak Creek Apartments PUD included the following condition of approval; "5: The existing natural rock outcropping on the site shall be preserved." In compliance with this condition, the public, southern section of Graylawn constructed by the Oak Creek Apartments project was designed to maintain this low rock projection within the roadway, by use of a small landscaped island. The Project will retain this island within the public section of Graylawn Avenue. Therefore the project as proposed would have no impacts to the rock outcropping within the island.

The Project site contains three additional locations where rock outcroppings are present; one near the Project proposed pool site, likely removed for new construction, and two others along the rail lines. The rock outcroppings along the rail lines are mostly located with the 20-foot PG&E easement in this area, but portions of these rocks would be removed for construction of new roads and parking. These rock outcroppings are not readily visible, nor are they identified locally as important visual resources. Therefore, the project would have less than significant impacts to rock outcroppings.

Historic Buildings

The site does not contain any buildings. There are no historic buildings onsite or in the project vicinity that would be affected by the proposed project. Therefore the project would have no impacts on historic buildings.

Mitigation Measures

To achieve greater consistency with the City's River Plan and General Plan, specifically to retain the aesthetic value of the remnant oak woodlands and other mature riparian trees which mark the location of the River in contrast to the adjacent grassy fields, the residential structures and their associated improvements shall be shifted so as to not extend into the Petaluma River Plan Corridor (as depicted at Figure 6-6).

Mitigation Measure Visual-2: Implement Mitigation Bio-10A: Preclude Residential Development from intruding into the Petaluma River Plan Corridor. No portion of the residential component of the Project shall extend into the Petaluma River Plan Corridor (comprised of the Preservation, Restoration, and Buffer management zones of the River Plan; see Corridor mapped at Figure 6-6 - see also discussion and Mitigation Measure Bio-11A). Only River Plan Corridor components shall be allowed with the Corridor including the river trail, terracing and restoration.

Resulting Level of Significance

With implementation of Mitigation Measures Visual-2, the Project would comply with City of Petaluma Petaluma's River Access and Enhancement Plan regarding retention of the woodlands that mark the location of the River in contract to the adjacent fields, and the impact would be reduced to a level of less than significant.

Visual Character

Visual-3: The Project could potentially degrade the existing visual character or quality of the site and its surroundings due to the removal of mature trees and conflict with the River Plan. (**Less than Significant with Mitigation**)

The visual character of the Project area is defined by the Petaluma River to the north and east, the SMART rail corridor to the west, the existing Oak Creek Apartments and single-family residences to the south, and the undeveloped upland grasslands with scattered trees internal to the site.

New development as proposed by the Project will substantially change the visual qualities and characteristics of the site, as demonstrated in **Figures 4-3 through 4-10**. As these photo-simulations demonstrate, the Project will change the character of the site with the introduction of new residential buildings and associated improvements.

The introduction of a medium density multi-family residential land use is generally consistent with the visual character of the immediately contiguous Oak Creek Apartments. In accordance with the Project site's Medium Density Residential General Plan land use designation, 278 multi-family residences will be arranged on 15.45 net acres. This represents a residential density of 18 units per net developable acre, arranged in multiple 3-story buildings. The existing 2-story Oak Creek Apartments has a density of approximately 12 units to the net acre, demonstrating that while the existing complex is 2-story and the proposed complex is anticipated to be 3-story, the two apartment complexes are generally similar in the character and development pattern on the ground plane with the additional density occurring by use of a third floor of apartments at the Project site[3]. This ground plane development pattern enabled the existing Oak Creek Apartments to retain a number of mature oak trees and to be well landscaped with trees that have since grown to significant size, resulting in a lush complex; this visual character appears replicable at the Project site. The fully detailed apartment complex landscape plan will be review as a component of the Site Plan and Architectural Review process.

Where the Project abuts the single-family, and generally single-story, homes along Graylawn Avenue and Bernice Court, the conceptual site plan maintains a distance of at least 60 feet between existing residences and the proposed Project and a setback of at least 25 feet to the property line which they share.

Residences will be oriented along the proposed Graylawn and Shasta Avenue extensions, which connect internal site circulation within drive-aisles with parking stalls on either side, and that circulate through the Project site. The internal circulation network would include curbs, gutters, sidewalks, landscaping and designated walkways throughout the site. The proposed site plan does not include single-loaded streets along the riparian corridor as General Plan policy 2-P-8 directs, but does provide visibility to the riparian corridor and the River from the to-be-maintained landscaped terminus of Graylawn Avenue and proposed a pedestrian connection from the sidewalk along Graylawn and the river trail.

As discussed above, in order to accommodate flood terracing, the Project will result in removal of vegetation from the Petaluma River banks, but the Project includes a Habitat and Mitigation and Maintenance Plan at the River that will result in the restoration and expansion of a riparian corridor (approximately 2.08 acres) below the expanded top of bank.

[3] Two stories at 12 units/net acre and 3 stories at 18 units/net acre each result in about 6 units per acre in terms of ground level lot coverage.

Existing View

Simulated View, with Project

Figure 4-3
Existing and Simulated View, Veiwpoint #1 from US 101 (looking south)

Source: photo and simulation by enVision Design

Existing View

Simulated View, with Project

Figure 4-4
Existing and Simulated View, Veiwpoint #2 from Lynch Creek Bridge (looking northwest)

Source: photo and simulation by enVision Design

Existing View

Simulated View, with Project - the simulated view does not include proposed landscaping (and thus shows the Project immediately post-construction) and is not fully consistent with proposed tree removal

Figure 4-5
Existing and Simulated View, Veiwpoint #3 from Cinnebar Avenue west of the SMART Tracks, (looking east)

Source: photo and simulation by enVision Design

Existing View

Simulated View, with Project - the simulated view does not include proposed landscaping (and thus shows the Project immediately post-construction) and is not fully consistent with proposed tree removal

Figure 4-6
Existing and Simulated View, Veiwpoint #3 from Cinnebar Avenue west of the SMART Tracks, (looking southeast)

Source: photo and simulation by enVision Design

This photo is provided to show the change in condition that occurred with the introduction of the new multi-family residential development (Logan Place) and the autobody shop (Lakeville Autobody), which effectively blocks views of the Sid Commons property from Petaluma Boulevard.

Figure 4-7
Existing and Simulated View, Veiwpoint #4 from Petaluma Boulevard (looking east)

Existing View

Simulated View, with Project - the simulated view does not include proposed landscaping (and thus shows the Project immediately post-construction), and is not fully consistent with proposed tree removal

Figure 4-8
Existing and Simulated View, Veiwpoint #5 from proposed Shasta Avenue Extension (looking northeast)

Source: photo and simulation by enVision Design

Existing View

Simulated View, with Project - the landscaped turn-around will be retained by the Project, so this simulation shows a condition more changed than is currently proposed by the Project

Figure 4-9
Existing and Simulated View, Veiwpoint #6 from terminus of Graylawn Avenue (looking north)

Source: photo and simulation by enVision Design

Existing View

Simulated View, with Project

Figure 4-10
Existing and Simulated View, Veiwpoint #6 from terminus of Graylawn Avenue (looking southwest)

Source: photo and simulation by enVision Design

For purposes of this CEQA review, there is nothing inherently degrading about the development of new residential uses on this site. The property is in immediate proximity to the adjacent existing residential development at the Oak Creek Apartments, is located within an area that consists primarily of residential uses and a few large vacant parcels primarily adjacent to the Petaluma River, and is recognized in the General Plan as an area where the development of a diverse range of residential densities and where infill development at equal or higher density and intensity than surrounding uses are both appropriate, when coupled with enhancing the River corridor and protecting trees where feasible.

Architecture

The Project includes conceptual architectural design to enable environmental review (see Figure 3-8, and Figures 4-3 through 4-10, generally), but the precise and detailed architectural design will occur at a subsequent design review stage. The City's subsequent Site Plan and Architectural Review (SPAR) process will consider whether the Project's proposed design and architecture achieve a satisfactory quality of design, and will separately consider such matters as:

- the appropriate use of quality materials,
- the proportion of the overall design,
- the compatibility of the architectural style with the overall character of the neighborhood,
- the siting of the structure on the property as compared to the siting of other structures in the immediate neighborhood, and
- the bulk, height, and color of the proposed structure as compared to the bulk, height, and color of other structures in the immediate neighborhood.

Pursuant to IZO Section 24.010, architectural and site plan review takes place prior to the issuance of any building permits. At that time, the precise massing and architectural design will be reviewed. All development will be reviewed for consistency pursuant to Table 4.9 of the IZO, which specifies required setback, height limitation, site coverage, and other development standards. These zoning district standards and the SPAR process ensure that the proposed development is consistent with the existing development in the Project vicinity.

Tree Removal and Replacement to accommodate Proposed Residential Buildings

The bulk of the residential buildings are proposed outside of the Petaluma River Plan Corridor, within the uplands area of the Project site. That area has been previously disturbed as a result of prior soil removal and annual fire control, however trees are scattered throughout the site; 57 of the 80 existing trees outside the River Plan Corridor are proposed for removal, including 21 Valley and Coast live oaks, 11 Coast Redwoods, 13 non-protected tree species, and 12 non-protected trees recommended for removal by the arborist because they are dead, in poor health or have poor structural integrity. Of the 23 trees to be preserved, 18 are trees with trunks outside the Project area or straddling an exterior property line with branches that overhang the Project site; these include 5 oaks on the Oak Creek Apartments parcel, 6 trees within the landscaped Graylawn turnaround, 1 oak on the property line shared with 42/44 Graylawn Avenue, and 6 trees on or straddling the rail line property. The 5 trees proposed to be preserved whose trunks are within the Project site (but outside the River Plan Corridor), are oak 39 designed to remain on site near the center of the apartment complex and another oak and 3 walnut trees located between the Bernice Court EVA, the Shasta Avenue extension on to the site, and the project property line shared with Graylawn Ave residents.

The River Plan River Oriented Development Zone (RODZ) directs protecting fragile habitat isolated in the RODZ (APN-009), naming oaks specifically, whenever feasible. A condition of the Oak Creek Apartments PUD directs preservation of all existing oaks on APN-009 (though the proposed PUD Amendment requests removal of this restriction). The City's General Plan and Implementing Zoning Ordinance direct tree preservation to the greatest extent possible. Trees represent an aesthetic resource as well as a biological resource.

As indicated in Chapter 6: Biology, protected trees approved for removal are required to be replaced pursuant to the Petaluma City Tree Ordinance. Implementation of the following mitigation measures will reduce potential impacts to the visual character and quality of the site to less than significant levels.

Mitigation Measure

Mitigation Measure Visual-3A: Inclusion in SPAR. The Site Plan and Architectural Review process shall include evaluation and review of the Project for:

a) Creation of a lush landscape plan planned to accommodate significant trees in a manner consistent with the Oak Creek Apartment complex; see also Mitigation Bio-9: Incorporation of Native Plants in Landscaping Plans.

b) Adequate setbacks and/or landscaping between existing abutting residential structures in the R2 zoning district (addressed from Graylawn Avenue and Bernice Court).

c) Extent of desirability of utilizing a single-loaded street near the River corridor, as the means of ensuring the creation of linear open space corridors with maximum public accessibility, visibility, and opportunities for stewardship pursuant to GP 2-P-8.

Mitigation Measure Visual-3B: Implement Mitigation Bio-10B: RODZ review at SPAR. The Site Plan and Architectural Review process shall include evaluation and review of the Project for consistency with River Oriented Development Zone (RODZ) policies and design guidelines. (See River Plan page 79-80 and Chapter 9: Design Guidelines.) As the concept plan for the apartment project is fully detailed for Site Plan and Architectural Review, the northern portion of the Project that is within the RODZ (APN -009) shall be designed pursuant to the RODZ Guidelines.

Mitigation Measure Visual-3C: Implement Mitigation Bio-11A, particularly sections c through e: Further Preservation of Existing Trees. While it is recognized that the preservation of all existing trees on the Project site may conflict with reasonable land development considerations and with creation of the terrace directed by the General Plan, the design of the Project shall seek to preserve the most desirable and significant healthy trees on site.

a) As River Plan policy 20 (page 80) specifically directs the protection, restoration, and enhancement of fragile habitat isolated in the RODZ, such as oaks, whenever feasible and as Condition 5 of the Oak Creek Apartments PUD states all existing on-site oak trees shall be permanently preserved, preservation of the most healthy and mature oak trees on APN-009 shall be pursued during Site Plan and Architectural Review; these are oaks 36 and 59 – 62, all 5 of which were found to be in good to excellent condition and each of which is a mature oak ranging from 21 to 37 inches in diameter. Other trees shall also be considered for preservation but may not warrant the same level of priority, being either burned and in only fair condition (oak 37) or young as compared to oaks 36 and 59-62 and thus replaceable within a shorter period of time than the mature oaks (oaks 101 and 202, being within the dripline of to-be-preserved oak 38 and near the to-be-preserved landscaped turn-around respectively).

b) The Site Plan and Architectural Review process shall further consider site design modifications to preserve Protected trees to the greatest extent possible at APN-006 generally (as directed by the Tree Ordinance). Each Protected tree shall be further considered for preservation; oaks 1, 13, 17, and 100 shall be particularly pursued.

c) During preparation of the site plan for Site Plan and Architectural Review, the applicant shall work collaboratively with the arborist and the civil engineer to design a site plan that addresses Bio 11 b through d. The arborist shall provide the further tree preservation analysis, as part of the SPAR submittal.

Resulting Level of Significance

With implementation of Mitigation Measure Visual-3 as well as Visual-2, the Project would comply with City of Petaluma plans, policies and ordinances regarding protected trees, and the impact would be reduced to a level of less than significant.

However, removal of any mature oak trees from the portion of the Project site within APN -009 for the residential component (even if replaced) would be inconsistent with the prior condition of approval for the Oak Creek Apartment project PUD; though the Project includes a proposal to amend this restriction.

Light and Glare

Visual-4: Development of the Project would create a new source of substantial light or glare, which could adversely affect day or nighttime views in the area. (**Less than Significant with Mitigation**)

The Project would result in construction of new structures and parking areas on land that is currently vacant. Lighting of these new structures, lighting of parking areas, and lights from vehicles would be new sources of light and glare at the site that could adversely affect day or nighttime views, or that could be considered a significant nuisance pursuant to the definitions established under the City's IZO.

Mitigation Measures

In order to ensure compliance with the regulatory requirements for glare as found in Chapter 21 section 21.010 of the IZO pertaining to direct and indirect glare, the following mitigation measure is recommended.

Mitigation Measure Visual-4: Glare Minimization Design Standards. The following measures shall be applied to reduce light and glare at the Project site:

a) Lighting designs shall employ fixtures that would cast light in a downward direction, and building materials should not be sources of substantial glare.

b) Lighting should generally occur at intersections, areas of pedestrian activity, and building entrances, and be minimized elsewhere.

c) Ornamental, pedestrian-scale fixtures shall be utilized to the degree possible. Lighting shall be designed to minimize glare and the direct view of light sources.

d) No lighting shall blink, flash, or be of unusually high intensity or brightness.

e) Lighting shall utilize energy-efficient fixtures which provide a balance between energy

efficiency and pleasing light color.

f) High-pressure sodium fixtures shall be utilized for street lighting. Metal halide, incandescent, or color-balanced fluorescent fixtures may be used for other lighting systems. Low-pressure sodium fixtures are prohibited.

g) All streetlights shall utilize cut-off fixtures to minimize visibility from adjacent areas.

h) Parking area lighting fixtures shall be no higher than necessary to provide efficient lighting of the parking areas.

i) Landscape lighting fixtures shall be hidden from direct view unless designed as an integral part of the area.

j) Landscape lighting sources shall be shielded from view at night, with the emphasis being on the object or view being lit. See also Mitigation Measure Bio-7A.

Resulting Level of Significance

With implementation of this mitigation measure and Bio-7A, the amount of light and glare emanating from the Project site would be considered less than significant.

5

Air Quality

The following chapter of this EIR provides an analysis of air quality impacts resulting from implementation of the Project. A separate discussion on potential impacts associated with greenhouse gas emissions is provided in Chapter 9 of this EIR. The information presented in this chapter of the EIR has been derived from the following primary sources:

- CalEEMod Emissions Model Version: 2016.3.1, output dated October 3, 2017 (**Appendix 5A**)
- Environ, International, Health Risk Assessment, March 2014 (included in **Appendix 5B**)
- Bay Area Air Quality Management District, *Clean Air Plan*, 2017

Physical Setting

Meteorology and Climatology

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The climate of the Petaluma area can be described as Mediterranean, with hot, dry summers and cool, wet winters. Summer maximum temperatures are generally in the low-to-mid 80s, with minimum temperatures during the summer near 50 degrees. In the winter, maximum temperatures are generally in the high 50's to low 60's, with the minimum temperatures dropping to the high 30's.

Wind patterns in the Petaluma River Valley are strongly influenced by marine air flowing eastward through the Petaluma Gap (which generally coincides with the path of the Bodega Highway). Prevailing winds at the Petaluma Municipal Airport (approximately 2 miles east of the Project site) are generally from the west-northwest, although during winter storms, the prevailing winds may shift, and come from the south-southeast. The annual average wind speed as measured at the Petaluma Municipal Airport is seven miles per hour. When the ocean breeze coming through the Petaluma Gap is weak, strong winds from the east may carry polluted air into the area from the Central Valley and the Carquinez Strait. In the immediate vicinity of the Project site, the prevailing winds generally parallel U.S. 101.

The project site lies within the Petaluma River Valley, approximately 11 miles north of the San Pablo Bay. To the east, the valley is bordered by the Sonoma Mountains, with the San Pablo Bay at the southeast end of the valley. To the west are a series of low hills and further west are the Estero Lowlands, which opens to the Pacific Ocean. The region from the Estero Lowlands to the San Pablo Bay is known as the Petaluma Gap. This low-terrain area is a major transport corridor allowing marine air to pass into the Bay Area.

Petaluma's air quality is generally good, due to the flow of marine air coming through the Petaluma Gap and the relatively low population density of the area. There are two scenarios, however, which may produce elevated pollutant levels in the Petaluma River Valley: 1) during stagnant conditions on those mornings when a weak ocean breeze meets a weak bay breeze, and 2) during afternoons when an

eastern or southeastern wind pattern may bring in pollution from the Carquinez Strait and the Central Valley.

As motor vehicle use in the Petaluma River Valley increases, an associated increase in air contaminants may be anticipated. U.S. 101 and its interchanges represent the most significant source of air pollution in the Petaluma area. Since the prevailing wind generally follows the path of U.S. 101, pollutant loads from the highway tend to be carried to the southeast, away from most developed portions of the Petaluma River Valley. On those occasions when the wind shifts during the winter, however, Petaluma is downwind of pollutant loads from the refineries on the Carquinez Strait, and pollutants from U.S. 101 are carried into the downtown area.

Existing Air Quality

Air quality in the region is controlled by the rate of pollutant emissions and meteorological conditions. Meteorological conditions such as wind speed, atmospheric stability, and mixing height may all affect the atmosphere's ability to mix and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while frequent, short-term variations result from changes in atmospheric conditions.

National and State Ambient Air Quality Standards

The Federal Clean Air Act (FCAA) and the Californian Clean Air Act (CCAA) promulgate, respectively, national and state ambient air quality standards for carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), particulate matter 10 microns or less in diameter (PM_{10}), and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$). Other criteria pollutants (e.g., lead, sulfur dioxide) also have ambient standards, but they are not discussed in this document because emissions of these pollutants from the Project are expected to be negligible, and because the San Francisco Bay Area Air Basin (SFBAAB) does not exceed established ambient standards for these criteria pollutants. Ambient standards specify the concentration of pollutants to which the public may be exposed without adverse health effects. Individuals vary widely in their sensitivity to air pollutants, and standards are set to protect more pollution-sensitive populations (e.g., children and the elderly). National and state standards are reviewed and updated periodically, based on new health studies. California ambient air quality standards tend to be at least as protective as national ambient standards, and are often more stringent (see **Table 5-1**).

Table 5-1: Health-Based Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard
Ozone	1 Hour	0.09 ppm	NA
	8 Hour	0.070 ppm	0.075 ppm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9.0 ppm
Nitrogen Dioxide	1 Hour	0.18 ppm	0.10 ppm
	Annual	0.030 ppm	0.053 ppm
Sulfur Dioxide	1 Hour	0.25 ppm	0.075 ppm
	24 Hour	0.04 ppm	0.14 ppm
Particulates, less than 10 microns (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3
	Annual	20 µg/m^3	NA
Particulates, less than 2.5 microns ($PM_{2.5}$)	24 Hour	NA	35 µg/m^3
	Annual	12 µg/m^3	12 µg/m^3

Concentrations:

ppm = parts per million
µg/m3 = micrograms per cubic meter

Source: Bay Area Air Quality Management District, Bay Area Pollution Summary – 2012.

Attainment Status

For planning purposes, regions like the San Francisco Bay Area Air Basin are given an air quality status designation by the federal and state regulatory agencies. Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated “attainment” on a pollutant-by-pollutant basis. When monitored concentrations exceed ambient standards within an air basin, it is designated “nonattainment” for that pollutant. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The attainment status for the SFBAAB is summarized in **Table 5-2**, below.

Table 5-2: Regional Attainment Status

Pollutant	State Status	Federal Status
Ozone (O_3) – 1-Hour Standard	**Nonattainment**	Not Applicable
Ozone (O_3) – 8-Hour Standard	**Nonattainment**	**Nonattainment**
Respirable Particulate Matter (PM_{10})	**Nonattainment**	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	**Nonattainment**	**Nonattainment**
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Unclassified
Sulfur Dioxide (SO_2)	Attainment	Attainment
Sulfates	Attainment	Not Applicable
Lead	Not Applicable	Attainment
Hydrogen Sulfide	Unclassified	Not Applicable
Visibility Reducing Particles	Unclassified	Not Applicable

Source: Bay Area Air Quality Management District. http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

The SFBAAB as a whole does not meet state or federal ambient air quality standards for ground level ozone and $PM_{2.5}$ and it does not meet the state standards for PM_{10}. All other criteria pollutants are in attainment or are unclassified.

Monitoring Data

The Project is located within the San Francisco Bay Area Air Basin (SFBAAB), which is regulated by the Bay Area Air Quality Management District (BAAQMD). BAAQMD monitors air quality conditions at more than 30 locations throughout the Bay Area. The closest monitoring station to the Project is located in San Rafael (there is another monitoring site about the same distance away in Santa Rosa, but that station didn't record PM10 levels and showed no exceedances in the last few years). Monitoring station measurements indicate that air quality in the vicinity of the Project site generally performs well against State standards for criteria air pollutants with few exceedances of pollutant standards between 2013 and 2015. **Table 5-3** summarizes exceedances of the state and federal standards at the San Rafael monitoring site and Bay Area-wide.

Table 5-3 Summary of Criteria Air Pollution Monitoring Data

Pollutant	Standard	Monitoring Site	Days Standard Exceeded		
			2013	2014	2015
Ozone	State 1-Hour	San Rafael	0	0	0
		SF Bay Area Air	3	3	7
Ozone	Federal 8-Hour	San Rafael	0	0	0
		SF Bay Area Air	3	5	12
Ozone	State 8-Hour	San Rafael	0	0	0
		SF Bay Area Air	3	10	12
PM_{10}	Federal 24-Hour	San Rafael	0	0	0
		SF Bay Area Air	0	0	0
PM_{10}	State 24-Hour	San Rafael	1	0	0
		SF Bay Area Air	1	2	1
$PM_{2.5}$	Federal 24-Hour	San Rafael	2	1	1
		SF Bay Area Air	13	3	9
Carbon Monoxide	State/Federal 8-Hour	San Rafael	0	0	0
		SF Bay Area Air	0	0	0
Nitrogen Dioxide	State 1-Hour	San Rafael	0	0	0
		SF Bay Area Air	0	0	0

Notes:

The Project site is between monitoring stations in San Rafael and Santa Rosa. The Santa Rosa station recorded 0 days of exceedances during this time period. The San Rafael station exceedances are included above.

PM_{10} and $PM_{2.5}$ are measured every sixth day in Redwood City and other Bay Area sites, so the number of days exceeding the standard is estimated.

Source: Bay Area Air Quality Management District Air Pollution Summaries (http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx)

Table 5-3 shows that exceedances of O_3, $PM_{2.5}$ and PM_{10} standards occur in the San Francisco Bay Area Air Basin. In recent years, the State and Federal O_3 standards have been exceeded at least somewhere in the Bay Area on 7 to 12 days per year. The Bay Area has exceeded the $PM_{2.5}$ standard on 3 to 13 sampling days per year. The San Rafael monitoring site logged 0 to 1 exceedance per year between 2013

and 2015. Standards for CO and NO_2, or any other criteria air pollutant not otherwise mentioned, were not exceeded anywhere in the Bay Area during this time period.[1]

Air Pollutants

Criteria Pollutants

Ambient air quality standards are established by state and federal environmental agencies for specific air pollutants most pervasive in urban environments. These pollutants are referred to as criteria air pollutants because the standards established for them were developed to meet specific health and welfare criteria set forth in the enabling legislation. The criteria air pollutants that would be emitted as a result of the proposed development of the Project site include ozone (O_3) precursors (oxides of nitrogen [NO_x] and reactive organic gases [ROG]), carbon monoxide (CO), nitrogen dioxide (NO_2), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Other criteria pollutants, such as lead (Pb) and sulfur dioxide (SO_2), would not be substantially emitted following the proposed development of the Project site or by Project-related traffic.

Ozone (O_3)

O_3 is formed in the atmosphere by a complex series of photochemical reactions that involve "ozone precursors" that are two large families of pollutants: oxides of nitrogen (NO_x) and reactive organic gases (ROG). NO_x and ROG are emitted from a variety of stationary and mobile sources. While NO_2, an oxide of nitrogen, is another criteria pollutant discussed below, ROGs are included in this discussion as O_3 precursors. While O_3 serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation potentially harmful to humans, when it reaches elevated concentrations in the lower atmosphere near ground level it can be harmful to the human respiratory system and to sensitive species of plants. O_3 concentrations build to peak levels during periods of light winds, bright sunshine, and high temperatures. Short-term O_3 exposure can reduce lung function in children, make persons susceptible to respiratory infection, and produce symptoms that cause people to seek medical treatment for respiratory distress. Long-term exposure can impair lung defense mechanisms and lead to emphysema and chronic bronchitis. Sensitivity to O_3 varies among individuals, but about 20 percent of the population is sensitive to O_3, with exercising children being particularly vulnerable.

Carbon Monoxide (CO)

Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood, and can cause dizziness and fatigue, impair central nervous system function, and induce angina in persons with serious heart disease. Primary sources of CO in ambient air are passenger cars, light-duty trucks, and residential wood burning.

Nitrogen Dioxide (NO_2)

The major health effect from exposure to high levels of NO_2 is the risk of acute and chronic respiratory disease. NO_2 is a combustion by-product, but it can also form in the atmosphere by chemical reaction. NO_2 is a reddish-brown colored gas often observed during the same conditions that produce high levels

[1] BAAQMD, Air Pollution Summaries, http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx, accessed October, 2016.

of O_3 and can affect regional visibility. NO_2 is one compound in a group of compounds consisting of oxides of nitrogen (NO_x). As described above, NO_x is an O_3 precursor compound.

Particulate Matter (PM)

Particulate matter consists of particles of various sizes which can be inhaled into the lungs and cause adverse health effects. Particulate matter is regulated by the fraction of course particulates 10 microns (a micron is one one-millionth of a meter) or less in diameter (PM_{10}) and by the fraction of fine particulates 2.5 microns or less in diameter ($PM_{2.5}$). The health effects from long-term exposure to high concentrations of particulate matter are increased risk of chronic respiratory disease like asthma, and altered lung function in children. Short-term exposure to high levels of particulate matter has been shown to increase the number of people seeking medical treatment for respiratory distress, and to increase mortality among those with severe respiratory problems. Particulate matter also results in reduced visibility. Ambient particulate matter can come from many sources. It is emitted directly by combustion sources (e.g., motor vehicles, industrial facilities, and residential wood burning), and in the form of dust from ground-disturbing activities such as construction and farming. It also forms in the atmosphere from the chemical reaction of precursor gases.

Toxic Air Contaminants (TACs)

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. Toxic Air Contaminants (TACs) are pollutants which may be expected to result in an increase in mortality or serious illness, or which may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, and damage to the body's natural defense systems, and diseases which can lead to death.

TACs are a broad class of compounds known to cause morbidity or mortality (cancer risk), and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

TACs can be separated into carcinogens and non-carcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Non-carcinogenic TACs differ in that there is generally assumed a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Diesel exhaust is the predominant TAC in urban air, and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

In August, 1998, CARB formally identified DPM as a TAC. Diesel particulate matter is of particular concern, since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by

EPA as hazardous air pollutants, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are small enough to be inhaled into the lungs. Like other particles of this size, a portion will become trapped within the lung, possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions to 85 percent by 2020. The U.S. EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Other sources of TAC include smoke from residential wood combustion through the use of fireplaces. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind, the pollution can persist for many hours, especially in sheltered valleys during the winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems. BAAQMD Regulation 6, Rule 3, disallows wood-burning devices in new construction, except those meeting U.S. EPA emissions targets and approved by the Air Pollution Control Officer of the Bay Area Air Quality Management. Any wood burning features included as part of the subject project are required to achieve compliance with this rule.

Sensitive Receptors

The BAAQMD CEQA Guidelines define sensitive receptors as "facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals, and residential areas."

Sensitive receptors in the immediate vicinity of the Project site include existing residential development (e.g., the Oak Creek Apartments, and homes located along Graylawn Avenue, Jess Avenue, Payran Street and Shasta Road). Sensitive receptors located at a greater distance from the Project site would include the McKinley Elementary School about 2,800 feet to the southeast, and on the east side of U.S. 101 the Petaluma Valley Hospital about 2,700 feet to the east, with Lucchesi Park and Community Center just further.

Regulatory Setting

The Federal Clean Air Act (FCAA) governs air quality in the United States and is administered by the United States Environment Protection Agency (EPA). In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA), which is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Project site is located in the City of Petaluma, which is situated in the San Francisco Bay Area. The Bay Area Air Quality Management District (BAAQMD) is the regional governmental agency that regulates sources of air pollution in much of the nine counties that make up the San Francisco Bay Area Air Basin.

Federal Regulations

Clean Air Act

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

The SFBAAB is subject to major air quality planning programs required by the Federal Clean Air Act (CAA) (1977, last amended in 1990, 42 United States Code [USC] 7401 *et seq.*). The CAA requires that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards within the deadlines specified in the Clean Air Act (see further discussion, below).

State Regulations

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

Clean Air Act

In 1988, California passed the California Clean Air Act (CCAA, California Health and Safety Code § 39600 et seq.). Under the CCAA, the Bay Area Air Basin is required to have a Clean Air Plan (CAP) to achieve and maintain ozone standards. Both the federal Air Quality Plan and the state CAP rely on the combined emission control programs of the EPA, California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD, see further discussion below).

Air Quality and Land Use Handbook

CARB published the *Air Quality and Land Use Handbook* in 2005 (CARB 2005) to provide guidance, which is intended to encourage local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors (e.g. homes or daycare centers) near sources of air pollution. The primary purpose of the document is to highlight the potential health impacts associated with proximity to common air pollution sources, so that those issues are considered in the planning process. CARB makes recommendations regarding the siting of new sensitive land uses near freeways, truck distribution centers, dry cleaners, gasoline-dispensing stations, and other air pollution sources. Examples of CARB siting recommendations are as follows:

- Avoid siting new sensitive land uses within 500 feet of a freeway.
- Avoid siting new sensitive land uses within 1,000 feet of truck distribution centers (accommodating 100 or more trucks per day).
- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation (500 feet for large operations).
- Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas station dispensing.

These "advisory" recommendations are derived primarily from modeling information based on the State as a whole and are not entirely reflective of conditions in Sonoma County. Siting of new sensitive land uses closer than the recommendation distances may be possible, but only after site specific studies are conducted to identify the actual health risks. CARB acknowledges that land use agencies have to balance other siting considerations such as housing and transportation needs, economic development priorities and other quality of life issues.

At the Project site, the freeway (U.S. 101) is at least 750 feet from the nearest proposed apartment building (greater than the 500 foot sensitive land use recommendation), and there are no dry cleaning operations, major truck distribution centers, or gas stations within the expressed distance.

Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. ARB has identified over 21 TACs, and adopted the EPA's list of HAPs as TACs. Most recently, diesel exhaust particulate was added to the CARB list of TACs.

Regional Regulations and Guidelines

The City of Petaluma is within the 9-county jurisdiction of the BAAQMD, which regulates air quality in the San Francisco Bay Area Air Basin.

2017 Clean Air Plan

The most recent BAAQMD plan for attaining California Ambient Air Quality Standards, the Bay Area 2017 Clean Air Plan (2017 CAP), was adopted by BAAQMD on April 19, 2017. The 2017 CAP includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter (PM), ozone (O_3), and toxic air contaminants (TACs); to reduce emissions of methane and other "super-greenhouse gases (GHGs)" that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

The proposed control strategy for the 2017 CAP consists of 85 specific control measures targeting a variety of local, regional and global pollutants. The control measures have been developed for stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants. Implementation of some of the control measures could involve

retrofitting, replacing, or installing new air pollution control equipment, changes in product formulations, or construction of infrastructure that have the potential to create air quality impacts.

The BAAQMD CEQA Guidelines set forth criteria for determining consistency with the CAP. In general a project is considered consistent if a) the project supports the primary goals of the CAP, b) includes control measures and c) does not interfere with implementation of the CAP measures.

CEQA Air Quality Guidelines

In December 1999, the BAAQMD adopted its CEQA Guidelines – "Assessing the Air Quality Impacts of Projects and Plans", as a guidance document to provide lead government agencies, consultants and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The 1999 BAAQMD CEQA Guidelines was an advisory document, and local jurisdictions were not required to utilize the methodology outlined therein.

The BAAQMD updated the 1999 CEQA Air Quality Guidelines in 2010, and in May of 2011 the BAAQMD adopted an updated version of its Thresholds of Significance for use in determining the significance of projects' environmental effects under CEQA (Thresholds), and published their CEQA Guidelines for consideration by lead agencies.

The BAAQMD resolution adopting the significance thresholds in 2011 was set aside by the Alameda County Superior Court on March 5, 2012. The judgement found that BAAQMD's adoption of the thresholds was a project under CEQA and therefore the thresholds should have undergone environmental analysis. Accordingly, the court set aside the thresholds on procedural grounds; it did not address any of petitioners' claims regarding the evidence on which BAAQMD relied in adopting the thresholds.

On August 13, 2013, the California Court of Appeals issued a full reversal of the County Superior Court's judgment, ruling that adoption of CEQA significance thresholds does not constitute a "project" under CEQA, and therefore does not require CEQA review.

On December 17, 2015, the California Supreme Court reversed in part the appellate court's judgment and remanded the case for further consideration consistent with the Supreme Court opinion. The California Supreme Court ruled unanimously that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." (California Building Industry Association v. Bay Area Air Quality Management District, December 17, 2015, Case No. S213478). Based on this decision, the analysis below (and in the rest of this EIR) that focuses on the impacts of the environment on the project, as opposed to the project on the environment, is provided for informational purposes only.

The 2011 BAAQMD thresholds were adopted following an extensive public review and research process, which provided substantial evidence in support of the thresholds. Scientific information supporting the thresholds was documented in BAAQMD's proposed thresholds of significance analysis.[2] Therefore, this Draft EIR relies on those thresholds for its analysis.

[2] Bay Area Air Quality Management District. December 7, 2009. "California Environmental Quality Act Guidelines Update – Proposed Thresholds of Significance."

The most recent version of the BAAQMD CEQA Guidelines were published May 2017, and includes revisions made to address the Supreme Court's opinion (*California Building Industry Association v. Bay Area Air Quality Management District*, December 2015).[3] The May 2017 Guidelines update does not address outdated references, links, analytical methodologies or other technical information that may be in the forthcoming Guidelines or Thresholds Justification Report. The BAAQMD is currently working to update any outdated information in the Guidelines, and anticipates release of an updated document in early 2018.[4]

Plan Bay Area 2040

On July 18, 2013, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) approved the Plan Bay Area (Plan). The Plan includes the Bay Area Sustainable Communities Strategy (SCS), in accordance with SB 375, and the 2040 Regional Transportation Plan. The Plan includes integrated land use and transportation strategies for the region, and was developed through One Bay Area, a joint initiative between ABAG, BAAQMD, MTC, and the Bay Conservation and Development Commission (BCDC). The Plan's transportation policies focus on maintaining the extensive existing transportation network and utilizing these systems more efficiently to handle density in Bay Area transportation cores (ABAG and MTC 2013). A focused update to the 2013 Plan, Plan Bay Area 2040, was released on March 31, 2017 and adopted in July 2017.

Toxic Air Contaminant Regulations

The BAAQMD has regulated TACs since the 1980s. At the local level, air pollution control or management districts may adopt and enforce ARB's control measures. Under BAAQMD Regulation 2-1 (General Permit Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review), all nonexempt sources that possess the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The BAAQMD limits emissions and public exposure to TACs through a number of programs. The BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. In addition, the BAAQMD has adopted Regulation 11 Rules 2 and 14, which address asbestos demolition renovation, manufacturing, and standards for asbestos containing serpentine.

3 In March 2012, the Alameda County Superior Court ordered BAAQMD to set aside use of the significance thresholds within the BAAQMD 2010 CEQA Guidelines and cease dissemination until they complete an assessment of the environmental effects of the thresholds in accordance with CEQA. The Court found that the thresholds, themselves, constitute a "project" for which environmental review is required. In August 2013, the First District Court of Appeal reversed the Alameda County Superior Court's decision. The Court held that adoption of the thresholds was not a "project" subject to CEQA because environmental changes that might result from their adoption were too speculative to be considered "reasonably foreseeable" under CEQA. In December 2015, the California Supreme Court reversed the Court of Appeal's decision and remanded the matter back to the appellate court to reconsider the case in light of the Supreme Court's opinion.

4 Alison Kirk, BAAQMD, Email Correspondence, June 6, 2017.

City of Petaluma Policies and Regulations

General Plan

The City's General Plan 2025 includes a chapter containing air quality policies and programs that seek to maintain or improve Petaluma's air quality. The General Plan EIR found certain cumulative air quality and GHG impacts to be significant and unavoidable. Subsequently, the 2010 BAAQMD CEQA Guidelines that provide new methodology for conducted General Plan air quality analysis were adopted including the establishment of threshold of significance. General Plan 2025 Chapter IV contains several air quality policies and programs, which relate directly to new development or the proposed Project. Other policies in the General Plan 2025 indirectly influence air quality. These policies include:

Policy 4-P-6: Improve air quality through required planting of trees along streets and within park and urban separators, and retaining tree and plant resources along the river and creek corridors.

a. Require planting of trees for every significant tree removed at a project site. Replacement planting may occur on the project site or on a publicly owned area, with long-term maintenance assured.

b. Encourage the use of trees which provide biogenic benefits to air quality and are suitable to the local environment.

Policy 4-P-7: Reduce motor vehicle emissions. Enforce land use and transportation strategies described in Chapter 1: Land Use and Chapter 5: Mobility that promote use of alternatives to the automobile for transportation, including walking, bicycling, bus transit, and carpooling.

Policy 4-P-15: Improve air quality by reducing emissions from stationary point sources of air pollution (e.g. equipment at commercial and industrial facilities) and stationary area sources (e.g. wood-burning fireplaces and gas-powered lawn mowers) which cumulatively emit large quantities of emissions.

a. Continue to work with the Bay Area Air Quality Management District to achieve emissions reductions for non-attainment pollutants; including carbon monoxide, ozone, and PM10, by implementation of air pollution control measures as required by State and federal statutes. The BAAQMD's CEQA Guidelines should be used as the foundation for the City's review of air quality impacts under CEQA.

b. Continue to use Petaluma's development review process and the California Environmental Quality Act (CEQA) regulations to evaluate and mitigate the local and cumulative effects of new development on air quality.

c. Continue to require development projects to abide by the standard construction dust abatement measures included in BAAQMD's CEQA Guidelines. These measures would reduce exhaust and particulate emissions from construction and grading activities.

d. Reduce emissions from residential and commercial uses by requiring the following:

    i. Use of high efficiency heating and other appliances, such as cooking equipment, refrigerators, and furnaces, and low NOx water heaters in new and existing residential units;

    ii. Compliance with or exceed requirements of CCR Title 24 for new residential and commercial buildings;

    iii. Incorporation of passive solar building design and landscaping conducive to passive solar energy use for both residential and commercial uses, i.e., building orientation in a south to southeast direction, encourage planting of deciduous trees on west sides of structures, landscaping with drought resistant species, and use of groundcovers rather than pavement to reduce heat reflection;

    iv. Encourage the use of battery-powered, electric, or other similar equipment that does not impact local air quality for nonresidential maintenance activities;

v. Provide natural gas hookups to fireplaces or require residential use of EPA-certified wood stoves, pellet stoves, or fireplace inserts.

Policy 4-P-16: To reduce combustion emissions during construction and demolition phases, the contractor of future individual projects shall encourage the inclusion in construction contracts of the following requirements or measures shown to be equally effective:

a. Maintain construction equipment engines in good condition and in proper tune per manufacturer's specification for the duration of construction;

b. Minimize idling time of construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment;

c. Use alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, and unleaded gasoline);

d. Use add-on control devices such as diesel oxidation catalysts or particulate filters;

e. Use diesel equipment that meets ARB's 2000 or newer certification standard for off-road heavy-duty diesel engines;

f. Phase construction of the project; and

g. Limit the hours of operation of heavy-duty equipment.

City of Petaluma Implementing Zoning Ordinance

The Petaluma Municipal Code regulates odors.

21.040 – Dangerous and Objectionable Elements

C. Odors. No emission shall be permitted of odorous gases or other odorous matter in such quantities as to be readily detectable when diluted in the ratio of one volume of odorous air to four volumes of clean air at the points of measurement specified in Section 21.120(B) or at the point of greatest concentration. Any process which may involve the creation or emission of any odors shall be provided with a secondary safeguard system, so that control will be maintained if the primary safeguard system should fail. There is hereby established as a guide in determining such quantities of offensive odors Table III, "Odor Thresholds", in Chapter 5, "Air Pollution Abatement Manual", copyright 1959, by Manufacturing Chemists' Association, Inc., Washington, D.C., and said manual, and/or table as subsequently amended.

Impact Analysis

Standards of Significance

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), City of Petaluma plans, policies and/or guidelines, and agency and professional standards, the Project's impact would be considered significant if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

4. Expose sensitive receptors to substantial pollutant concentrations;
5. Create objectionable odors affecting a substantial number of people.

In accordance with State CEQA guidelines, lead agencies must make significance determinations based on substantial evidence in the record for each project. The City has determined that there is substantial evidence to support BAAQMD's analysis as to the levels of pollutants that should be deemed significant, and the thresholds that the City should use in assessing whether the Project will have any health risk impact on the existing environment. Therefore, the City has determined that it will apply the thresholds of significance in the updated BAAQMD CEQA Guidelines. These air quality thresholds include:

- During project construction result in average daily emissions of 54 pounds per day of ROG, NOx, or PM2.5 or 82 pounds per day of PM10.
- During project operation result in average daily emissions of 54 pounds per day of ROG, NOx, or PM2.5 or 82 pounds per day of PM10; or result in maximum annual emissions of 10 tons per year of ROG, NOx, or PM2.5 or 15 tons per year of PM10.
- During either project operation or project construction of a new source or a new receptor, expose persons to substantial levels of Toxic Air Contaminants (TACs) resulting in:
  - a cancer risk level greater than 10 in one million,
  - a non-cancer risk (chronic or acute) hazard index greater than 1.0, or
  - an increase of greater than 0.3 micrograms per cubic meter of annual average PM2.5.
- During either project operation or project construction of a new source or a new receptor, expose persons to substantial levels of TACs resulting in a cumulative cancer risk level greater than 100 in a million, a cumulative non-cancer risk (chronic or acute) hazard index greater than 10.0, or a cumulative increase of greater than 0.8 micrograms per cubic meter of annual average PM2.5.
- If a project exceeds the identified project-level significance thresholds, its emissions would also be cumulatively considerable.

Conflict with Air Quality Plan

AQ-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan. (**No Impact**)

The BAAQMD recommends analyzing a project's consistency with current air quality plan control measures. Impacts would be significant if the Project would conflict with or obstruct implementation of the 2017 Clean Air Plan. Many of the 2017 Clean Air Plan's control measures are targeted to area-wide improvements, large stationary source reductions or large employers, and are not applicable to the Project. The Project would not impede implementation of air quality control measures, and would have no impact related to an inconsistency with the Clean Air Plan.

Furthermore, a project that is consistent with development assumptions included within a jurisdiction's General Plan which was considered in the development of the Clean Air Plan will not cause an obstruction to the implementation of the 2017 Clean Air Plan. Development of the Project site with up to 278 units is consistent with the level of expected development under the General Plan, and therefore would not interfere with implementation of the 2017 Clean Air Plan. Thus, there would be no impact due to a potential conflict with the CAP.

Construction Period PM_{10} Emissions

AQ-2: The Project could result in air quality impacts related to construction-period fugitive dust (PM_{10}), but these impacts would be reduced with implementation of required mitigation measures as recommended by the BAAQMD. (**Less than Significant with Mitigation**)

Construction of the Project would involve site preparation, grading, building construction, landscape installation and site paving. Site preparation consists of grubbing, removal of vegetation, shrubs and trees as well as the redistribution of soil pursuant to the grading plan. The Project also includes a terracing component of the western River bank. Terracing activities will result in the generation of fugitive dust during earth moving activities. Although these construction activities would be temporary, they would have the potential to cause both nuisance and health-related air quality impacts. PM10 is the pollutant of greatest concern associated with dust. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions. If uncontrolled, PM10 levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust deposited on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and construction activities represents a potentially significant impact associated with Project development.

Mitigation Measures

To address construction-period dust and PM_{10} concentrations, the following mitigation measures shall be implemented:

Mitigation Measure AQ-2A: Basic Dust Control. The Project shall comply with the following "Basic" mitigation measures as recommended by BAAQMD for reducing construction related emissions:

a) All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

b) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

c) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

d) All vehicle speeds on unpaved roads shall be limited to 15 mph.

e) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

f) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

g) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

h) Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action

within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. All exposed surfaces (e.g. parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

Mitigation Measure AQ-2B: Enhanced Dust Control. Because of the size of the site and the proximity of nearby sensitive receptors, the Project shall also comply with the following "Enhanced" mitigation measures as recommended by BAAQMD for reducing construction related emissions:

a) All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

b) All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

c) Windbreaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Windbreaks should have at maximum 50 percent air porosity.

d) Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

e) The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

f) All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

g) Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

h) Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

i) Minimizing the idling time of diesel powered construction equipment to two minutes.

j) The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.

k) Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).

l) Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.

m) Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

Resulting Level of Significance

With implementation of MM AQ-2A and MM AQ-2B, the Project's construction period generation of PM_{10} would not violate air quality standards or contribute substantially to an existing or projected air quality violation. The potential impacts to air quality from fugitive dust emissions following implementation of mitigation set forth above would be reduced to levels below significance.

Criteria Pollutant Emissions from Construction Activities

AQ-3: Construction of the Project would generate emissions of criteria air pollutants (ROG, NOx, PM_{10}, and $PM_{2.5}$) and evaporative emissions (ROG), but these emission levels for the Project would not exceed applicable air quality thresholds. (**Less than Significant)**

Construction activities would be a source of exhaust emissions from construction vehicles, which contribute to regional emission levels. Sources of emissions include utility engines, heavy-duty construction vehicles, hauling equipment, and motor vehicles transporting construction crews. Exhaust emissions from these construction activities will vary daily as construction activity levels change. Use of construction equipment and worker vehicles would result in combustion-related emissions of criteria air pollutants (ROG, NOx, PM10, and PM2.5). Application of architectural coatings for interior and exterior finishes would result in evaporative emissions (ROG) generated during construction activities.

At 278 units, the Project is above the BAAQMD's screening size for a mid-rise apartment project (240 units),[5] and therefore an analysis of criteria pollutant emissions was conducted. The Air Quality study for the Project used the California Emissions Estimator Model (CalEEMod, Version 2016.3.1) to prepare a quantitative estimate of construction-related emissions, including both on-site and off-site construction activities. The analysis uses inputs specific to the proposed Project, including:

- An overall construction process that includes site preparation, grading, building construction, paving, and architectural coating.
- A construction schedule that assumes buildout of 278 apartment units, conservatively assumed for analysis purposes to be constructed simultaneously.
- Construction is assumed to occur over an approximately 380-day period. The start date used in this analysis of January 2018 and a completion date of July 2019 provides for a conservatively early, worst-case analysis, as emission factors for construction equipment are projected to improve over time.
- Equipment quantities were estimated based on the construction needs of the Project and its size, and model default values were used for factors related to usage, horsepower and load factors. The equipment usage was then distributed across the demolition, site preparation, grading, building construction, paving and architectural coating sub-phases of the Project (**see Appendix 5**).

As shown below in **Table 5-4**, the modeling results show that predicted construction-period emissions of criteria pollutants would not exceed BAAQMD significance thresholds.

[5] Bay Area Air Quality Management District, California Environmental Quality Act Air Quality Guidelines, May 2011, Table 3-1.

Table 5-4: Regional Air Pollutant Emissions, Construction

Description	ROG	NO_X	PM_{10} *	$PM_{2.5}$ *
Construction emissions (tons/yr.)	4.98	6.89	0.30	0.28
Avg. Construction emissions (lbs./day)	26.19	36.26	1.57	1.47
BAAQMD Threshold (lbs./day)	54	54	82	54
Exceed Threshold?	No	No	No	No

* Applies to exhaust emissions only, not fugitive dust.

Source: Results from CalEEMod conducted 9/29/2017 are presented in Appendix 5A.

Mitigation Measures

None needed. However, consistent with BAAQMD recommendations for all projects regardless of the significance level of construction-period criteria pollutant emissions, mitigated construction emissions assume a 20 percent reduction for NOx and a 45 percent reduction for PM_{10} and $PM_{2.5}$, and account for limited idling times of construction equipment as included in the "Basic" dust control measures of Mitigation Measure AQ-2A above, which serve to further reduce construction-period criteria pollutant impacts.

Construction-Period Toxic Air Contaminant Emissions

AQ-4: Use of heavy-duty off-road and on-road construction equipment would produce emissions of toxic air contaminants, including diesel $PM_{2.5}$. Emissions from these construction activities would exceed the off-site community risk and hazards threshold of significance. (**Less than Significant with Mitigation**)

2014 Health Risk Assessment

Due to the proximity of adjacent residential units, which are considered sensitive receptors for construction-period health risks, a construction-period Health Risk Assessment was performed for the Project in 2014 (included in **Appendix 5B**). That 2014 Health Risk Assessment assumed a slightly larger project (at 282 units), and assumed construction to occur under three separate phases totaling approximately 2 years and seven months (or 957 days). The 2014 Health Risk Assessment's calculations found construction of that project would generate a total of 775 pounds of diesel particulate matter (DPM, or $PM_{2.5}$ as emissions), emitted over a period of 957 days, or an average volume of 0.81 lbs. of DPM per day.

The 2014 Health Risk Assessment then relied on the USEPA's ISCST3 air dispersion model to determine the potential health risks related to this diesel exhaust from construction equipment. The analysis determined the health risks to an individual living adjacent to the construction zone who is exposed to all construction emissions. The analysis included an increased age sensitivity factor for children, because of their increased daily breathing rate. Thus, the health risk analysis results were reported for the worst-case, maximally exposed individual, which would be a small child living adjacent to the construction zone. The results of this modeling indicated that the maximum exposed individual exposed to emissions from construction of the project (as assumed in 2014) would have an expected increase in lifetime

excess cancer risk of 65.3 in 1 million (exceeding the threshold of 10 in 1 million); their maximum chronic hazard index would be 0.134 (less than the threshold of 1.0); and the annual average $PM_{2.5}$ concentration they would be exposed to would be 0.63 µg/m^3 (exceeding the threshold of 0.30 µg/m^3). This calculated health risk was conservatively based on unmitigated emissions.

To address these construction-period health risks, the 2014 Health Risk Assessment also included an assessment of health risks pursuant to a mitigated construction emissions scenario, assuming a 20 percent reduction in NOx emissions, and a 45 percent reduction in PM_{10} and $PM_{2.5}$ emissions. These reductions accounted for limited idling times of construction equipment, and a requirement that off-road equipment of more than 50 horsepower used in the construction process achieve a fleet-wide average of 33 percent NOx reduction and 90 percent PM reduction, as compared to the most recent Air Resources Board fleet average. Options for reducing emissions to these levels included use of Tier 2 or better engines equipped with diesel particulate filters.

The results of the 2014 HRA found that, with Tier 2 diesel emission reductions or better on all construction equipment, health risk exposure to the maximum exposed individual (MEI) would be reduced to below threshold levels (see **Table 5-5**, below).

Table 5-5: Summary of 2014 Health Risk Assessment Results

Scenario	Annual Average DPM Concentration (µg/m^3)	Lifetime Excess Cancer Risk (in a million)	Chronic HI	Annual Average $PM_{2.5}$ Concentration
Unmitigated Conditions:				
MEI exposed to emissions from Project	0.67	65.3	0.134	0.63
Threshold		10.0	1.0	0.30
Exceed the Threshold?		**Yes**	No	**Yes**
Mitigated Conditions:				
MEI exposed to emissions from Project	0.04	4.0	0.008	0.04
Exceed the Threshold?		No	No	No

Source: Environ, International, 2014, see Appendix 5, Table 8

Comparative Date for 2017 Project

The Project as proposed is now slightly smaller than the project analyzed in the 2014 HRA (at 287 units rather than 282 units), and is now assumed to be constructed in one phase, occurring over approximately one year and seven months duration (or 380 days), rather than separate phases over 957 days. Furthermore, the BAAQMD released new HRA Guidelines in 2016 that modify certain assumptions that were used in the 2014 HRA. However, some important comparisons of the current Project and the prior 2014 HRA provide relevant conclusions:

- The more current 2017 CalEEMod model run calculates that the Project will generate less total diesel particulate matter emissions (at 558 total pounds) during the construction period than was assumed in the 2014 HRA (which were calculated to be 775 total pounds of DPM);
- At 558 total pounds of construction-period DPM emissions over a construction period of 380 days, the average emission rate will be 1.47 pounds of DPM per day.
- The calculated average daily DPM emission rate of 1.47 pounds of DPM per day (as now projected for the Project) represents an approximately 80 percent increase over the average daily emission rate as calculated in the 2014 HRA (which was 775 pounds over 957 days, or 0.81 pounds DPM per day).
- Although the Project's construction period is now assumed to last only 380 days, new 2016 BAAQMD Guidance suggests using the actual emission rates of the Project, applied over a minimum 3-year duration, for cancer risk assessments involving projects lasting 3 years or less. According to the BAAQMD 2016 Guidelines, a higher exposure to health risks, even over a short time period, may pose a greater risk than the same total exposure spread over a much longer period. Therefore, the Air District recommends that cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less (e.g., the 380-day construction period for the Project).

Given that health risk is a function of the exposure concentration, multiplied by a number of additional factors,[6] and assuming that all other factors used in the 2014 HRA remain constant, then health risks associated with the Project's construction, based on DPM concentrations as derived from 2017 CalEEMod output, would be approximately 1.8 times greater than as reported in the 2014 HRA. The resulting health risks would then be calculated as follows:

- Lifetime Excess Cancer Risk would be 117.5 in a million, compared to a threshold of 10 in a million (significant)
- The Chronic Health Index would be 0.24, as compared to a threshold of 1.0 (less than significant); and
- The Annual Average $PM_{2.5}$ Concentration would be 1.13 $\mu g/m^3$, as compared to a threshold of 0.30 $\mu g/m^3$ (significant).

Mitigation Measures

To address the significant construction-period health risk impacts associated with emissions of toxic air contaminants, the following mitigation measures shall be implemented.

Mitigation AQ-4: Construction-Period DPM Emission Reductions. All off-road construction equipment greater than 25 horsepower shall have engines that meet or exceed either U.S. Environmental Protection Agency (USEPA) or California Air Resources Board (ARB) Tier 4 Final off-road emission standards. The Contractor may use the next cleanest piece of off-road equipment (i.e., Tier 3 Engine with Level 3 Verified Diesel Emission Control Strategy [VDECS], Tier 3 Engine with Level 2 VDECS, or Tier 3 Engine with alternative fuel), if:

[6] Based on the equation; Risk = (C x CF x IFinh x CPF x ASF), where C represents Concentration, CF = Conversion Factor, IFinH = Intake Factor for Inhalation [IFinH], CPF = Cancer Potency Factor, and SSF represents the Age Sensitivity Factor

a) a particular piece of off-road equipment that meets these standards is technically not feasible;

b) the equipment would not produce desired emissions reduction due to expected operating modes;

c) installation of the equipment would create a safety hazard or impaired visibility for the operator; or,

d) there is a compelling emergency need to use off-road equipment that does not meet these standards; and

e) The Contactor develops a Construction Emissions Minimization Plan (CEMP) to describe the process used to identify the next cleanest piece of off-road equipment and the steps that will be taken to reduce emissions of criteria air pollutants to the greatest extent practicable.

Resulting Level of Significance

Use of Tier 4 off-road construction equipment engines can reduce tailpipe emissions of particulate matter (including $PM_{2.5}$, or DPM) by as much as 95 to 97 percent over tailpipe emission levels from non-regulated engines. Tier 1 (or non-regulated) engines are calculated by the US EPA to generate 0.8 grams/kWh of PM emissions, whereas Tier 4 engines are required to generate no more than 0.03 g/kwh of PM emissions, or a 96 percent reduction.[7]

A 96% reduction in construction-period emission would equate to a comparable 96% reduction in annual average DPM concentrations, and a similar 96% reduction in lifetime excess cancer risk, Chronic Health Index, and annual average $PM_{2.5}$ concentrations. As indicated in **Table 5-6**, implementation of the control measures identified in MM AQ-4 would reduce diesel particulate matter emissions such that health risk impacts related to construction activities would be reduced to a less than significant level.

Table 5-6: Comparative Project Health Risk Assessment Results, with Mitigation

Scenario	Lifetime Excess Cancer Risk (in a million)	Chronic HI	Annual Average $PM_{2.5}$ Concentration
Unmitigated Conditions:			
MEI exposed to emissions from Project	117.5	0.24	1.13
Mitigated Conditions (at 96% reduction from Tier 4 engines):			
MEI exposed to emissions from Project	4.7	0.01	0.05
Threshold:	10.0	1.0	0.30
Exceed the Threshold?	No	No	No

Source: as modified form Environ, International, 2014, see Appendix 5, Table 8 to account for increased PM emissions, derived from

[7] DieselNet.com, accessed at https://www.dieselnet.com/standards/us/nonroad.php#tier4

CalEEMod, 2017

Operational Air Quality Emissions

AQ-5: Operation of the Project will result in new emissions, primarily associated with vehicle trip generation. These new operational emissions will not violate air quality standards, contribute substantially to an existing or projected air quality violation, or otherwise exceed established thresholds. The Project is also compliant with all CARB-recommended siting criteria for new sensitive receptors. (**Less than Significant**)

The primary impact from development of the Project will be emissions associated with vehicle trip generation, which can either violate an air quality standard or contribute substantially to an existing or projected air quality violation. New vehicle trips emit ozone precursors (criterial pollutants) and carbon monoxide.

Carbon Monoxide

Emissions and ambient concentrations of carbon monoxide (CO) have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner-burning motor vehicles and motor vehicle fuels. No exceedances of the State or national CO standards have been recorded at any of the Bay Area's monitoring stations since 1991. The Bay Area has attained the State and national CO standards.

The *BAAQMD CEQA Guidelines* recommend estimating carbon monoxide concentrations where the project may exceed screening criteria. These screening criteria apply to projects that:

- are not consistent with the applicable Congestion Management Program,
- where the project would increase traffic volumes at affected intersections to more than 44,000 vehicles per hour, or
- where project traffic would increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited.

There is nothing about the Project that is inconsistent with the applicable Congestion Management Program. The Project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour, and would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour. These screening criteria are designed to be a conservative method of determining whether a project may cause exceedances of the carbon monoxide air quality standard. If these screening criteria are not met, the projects are assumed to have less than significant affects related to CO concentrations. Since the Project does not meet or exceed these screening criteria, the Project's impacts related to CO concentrations is presumed less than significant.

Criteria Air Pollutants

The Project would generate new emissions of criteria air pollutants, primarily as a result of new vehicle trips but also as a result of natural gas and electricity use, as well as off-site water and wastewater treatment and conveyance. The Project development parameters were input to the CalEEMod (version 2016.3.1) emissions calculator model, assuming energy reductions consistent with current Title 24 requirements. The modeling conservatively assumes that all of the Project would be fully constructed

and occupied by 2019. Default assumptions for Sonoma County were used. The CalEEMod calculations were performed in order to determine whether the Project would exceed air emissions thresholds for Reactive Organic Gases (ROG), Nitrogen Oxides (NO_x), PM_{10} and $PM_{2.5}$. Estimated operational emissions for the Project are shown in **Table 5-7**.[8] These emissions are below the significance thresholds established by BAAQMD, thus this impact would be less than significant.

Table 5-7: Operational Criteria Pollutant Emissions

	Project Emissions	BAAQMD Significance Threshold	Exceeds Threshold?	Units
Annual Emissions				
ROG	3.17	10	No	tons/yr.
NOx	2.86	10	No	tons/yr.
PM10 (exhaust)	1.81	15	No	tons/yr.
PM2.5 (exhaust)	0.61	10	No	tons/yr.
Daily Emissions				
ROG	17.37	54	No	lb./day
NO_x	15.68	54	No	lb./day
PM_{10} (exhaust)	9.93	82	No	lb./day
$PM_{2.5}$ (exhaust)	3.35	54	No	lb./day

Abbreviations: tpy = tons per year; lb./day= pounds per day.

Mitigation Measures

None needed.

Odors

AQ-6: The Project would not create objectionable odors affecting a substantial number of people. (**Less than Significant**)

[8] The CalEEMod model run prepared a quantitative estimate of operational emissions for a prior version of the Project at 282 units, therefore a conservative 'worst-case' as compared to the 278 units proposed

During construction, the various diesel-powered vehicles and equipment in use on the site would create odors. These odors would be temporary, and not likely to be noticeable much beyond the Project site's boundaries. The potential for diesel odor impacts is therefore less than significant.

Routine activity associated with residential uses at the Project site would not be expected to generate offensive odors, and while it might be possible for those living nearby to detect cooking odors or odors associated with painting and other maintenance activities occasionally, these odors would be temporary, would not affect substantial numbers of people, and would be considered less than significant.

Mitigation Measures

None needed.

Cumulative Air Quality Effects

AQ-7: The Project's construction-related emissions and operation emissions would not lead to cumulatively significant health risks beyond those discussed above in Impacts AQ-1 through -7.

By its very nature, air pollution is largely a cumulative impact. Generally, no single project is sufficient in size, by itself, to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative condition is considerable, then the project's impact on air quality would be considered significant. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Since the Project would not result in a significant air quality impact after implementation of all mitigation measures, the Project would not contribute to cumulatively considerable air quality impacts.[9]

Other Cumulative Air Quality Emissions

Other cumulative projects in the immediate vicinity include the Rainier Cross-Town Connector project, a new vehicle connection across the Petaluma River immediately adjacent to the Project site. According to the Rainier project's EIR:[10]

- Construction and operation of that project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation related to criteria pollutant emissions.

Criteria pollutant significance thresholds were created to prevent the violation of air quality standards or the contribution to an existing or projected cumulative air quality violation. Since neither the Rainier project nor the Sid Commons Project would emit criteria pollutants in excess of these thresholds, cumulative criteria pollutant emissions would be less than cumulatively considerable.

- Construction-related activities associated with the Rainier project were found to result in the generation of TACs, specifically diesel PM. The quantitative health risk assessment conducted to

[9] BAAQMD CEQA Guidelines 2011, page 2-1

[10] City of Petaluma, *Rainier Cross-Town Connector Draft Environmental Impact Report*, Chapter 4.2 Air Quality and Greenhouse Gas Emissions, July 2014

evaluate the potential health impacts of the Rainier Cross-Town Connector project concluded that, with required mitigation measures, health impacts would be reduced to below the project-specific significance threshold of 10 in a million excess cancer risks.

Because equipment would be operated on-site during construction of the Rainier project, emissions from that project may potentially impact the same sensitive receptors that may be impacted by construction emissions from the Sid Commons Project. However, construction emissions are variable and in most cases temporary, health risk impacts are typically based on a 70-year exposure period and there is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (OEHHA 2012), and construction impacts are most significant where adjacent to the construction area. Even under a conservative assumption that construction of the Rainier project and the Sid Commons project were to occur simultaneously, their combined construction period emissions would not add up to the 100 in a million cumulative threshold, nor would they produce an annual average $PM_{2.5}$ concentration> 0.8µg/m^3; therefore, construction period emissions would not be considered cumulatively considerable.

Mitigation Measures

None needed.