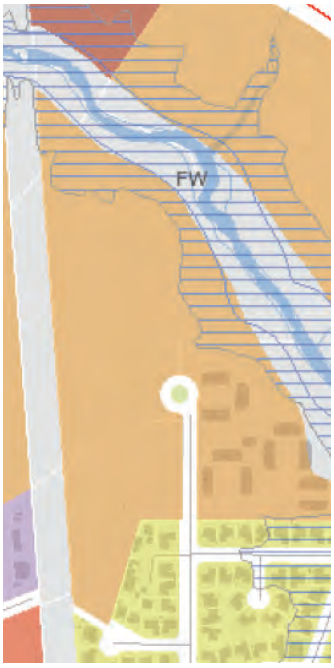
Sid Commons Apartment Project



Response to Comments/Final Environmental Impact Report

SCH # 2007072041
Lead Agency: City of Petaluma
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Sid Commons Apartment Project
Responses to Comments / Final EIR

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Introduction and Executive Summary

Purpose of the Final EIR

This Environmental Impact Report (EIR) is an informational document prepared by the City of Petaluma as Lead Agency, containing environmental analysis for public review and for City decision-makers to use in their consideration of approvals for discretionary actions needed on the proposed Sid Commons Apartment Project (Project).

On March 1, 2018, the City of Petaluma released a Draft EIR for the Project. The 45-day public review and comment period on that Draft EIR ended on April 16, 2018, although public comments were accepted through the period ending on the City Council meeting of May 21, 2018. During the public review and comment period, the City of Petaluma held the following public hearings:

- a Public Hearing before the City of Petaluma Planning Commission, held on April 18, 2018, and
- a Public Hearing before the City of Petaluma City Council, held on May 21, 2018

The purpose of these hearings was to inform the public about the contents of the Draft EIR and to receive oral comments on the Draft EIR about its adequacy and accuracy.

This Response to Comments document, together with the Draft EIR and the Draft EIR Appendices, constitute the Final EIR for the Project. Due to its length, the full text of the Draft EIR is not included within this Response to Comments document, but is included by reference as part of the Final EIR. The Draft EIR is available for review at the City Planning Division offices at 11 English Street in Petaluma, and on the City's website at:

http://cityofpetaluma.net/cdd/pdf/SidCommon/DraftEIR2018.pdf

Following the required 10-day agency review of this Response to Comments document, the City of Petaluma Planning Commission will hold a public hearing to consider making a recommendation to the City Council regarding certification of the Final EIR. The City Council will then hold a separate hearing to consider the Planning Commission's recommendations and to determine whether to certify that the Final EIR adequately discloses the environmental effects of the proposed Project and that the Final EIR has been completed in conformance with the California Environmental Quality Act (CEQA). Before the Planning Commission makes any recommendations regarding the approvals needed for the Project to the City Council, and before the City Council considers approval of the discretionary actions requested as part of the Project, both the Commission and the Council must independently review and consider the information contained in the Final EIR.

Required Contents of the Final EIR

The City of Petaluma has prepared this document pursuant to CEQA Guidelines Section 15132, which specifies that the Final EIR shall consist of the following:

- The Draft EIR or a revision of that Draft EIR
- A list of persons, organizations, and public agencies commenting on the Draft EIR
- Comments and recommendations received on the Draft EIR (either verbatim or in summary)

- The response of the Lead Agency to significant environmental points raised in the environmental review process
- Any other information added by the Lead Agency as part of its environmental review of the Project

This Final EIR incorporates comments from public agencies and the public. It also contains the Lead Agency's response to those comments.

Areas of Public Concern

Public comments primarily concern the environmental and CEQA topics discussed below.

- The original Project's proposed Shasta Avenue Extension and at-grade rail crossing
- General concerns about increased traffic levels, the accuracy and applicability of traffic counts as used in the Draft EIR to establish baseline (or existing) conditions, the accuracy of the trip generation rates assumed for the Project in the Draft EIR, the accuracy of the trip distribution patterns assumed in the EIR, particularly as to vehicle trips on Jess Avenue, and concerns about increased traffic on Graylawn Avenue and Jess Avenue
- Concerns about flooding and the potential for the Project to exacerbate flood conditions, including concerns about stormwater runoff volume (potentially affecting downstream flooding) and water quality, and the implications of increased sedimentation of the Petaluma River and whether current hydrology modeling accounts for this condition
- Loss of wetlands and riparian habitat

No New Significant Information

Revised Project

In response to the significant environmental conclusions raised in the Draft EIR, and in response to public comments on the Draft EIR, and City Planning Commissioner and City Council members' concerns raised during the Draft EIR public comment hearings, the Project applicant has proposed a revised conceptual site plan for the site (the Revised Project). The Revised Project site (site) comprises the same 19.24 gross acres of land as was included in the original Project, located in the City of Petaluma at the northern terminus of Graylawn Avenue, northwest of the existing Oak Creek Apartments.

The Revised Project includes a conceptual site plan for a 205-unit apartment complex, whereas the original Project had proposed 278 units (for a reduction of 73 units). Whereas the original Project was designed as a traditional 3-story apartment complex, the Revised Project now is designed as a "Big House" concept with the apartment units located within separate two-story apartment buildings, and each apartment building consisting of either seven or 10 individual apartment units, with a 25-foot setback from shared property lines. Similar to the original Project, the site plan for the Revised Project also includes a community clubhouse and an outdoor swimming pool. The Revised Project has a more substantial setback from the River such that it does not encroach into the Petaluma River Plan Corridor (see Corridor mapped at Figure 2-5 and 2-6) and substantially reduces impacts on the associated oak woodland habitat, is setback further from the rail lines (at 54 feet), and the Revised Project no longer proposes to construct the Shasta Avenue extension or its at-grade rail crossing. Many other aspects of the Revised Project, such as utility infrastructure and terraced grading along the riverbank for flood control purposes, remain similar to the original Project.

Recirculation Not Required

If significant new information is added to a Draft EIR after notice of public review has been given, but before certification of the Final EIR, the lead agency must issue a new notice and recirculate a Draft EIR for further

comments and consultation. Although this Response to Comment document contains new information specific to the Revised Project as now proposed, and includes certain corrections and clarifications to information presented in the Draft EIR, none of this new information, corrections or clarifications constitutes significant new information as defined under Section 15088.5 of the CEQA Guidelines. More specifically:

- No new significant environmental impacts have been identified as resulting from the Revised Project.
- No substantial increase in the severity of a previously identified environmental impact has been identified as resulting from the Revised Project and no additional mitigation measures are necessary to reduce such impacts to a level of insignificance.
- There is no feasible alternative or mitigation measure considerably different from others previously analyzed in the Draft EIR that would clearly lessen significant environmental impacts of the Project, and that the Project applicant declines to adopt.
- The Draft EIR was not fundamentally inadequate or conclusory in nature such that meaningful public review and comment were precluded.

Information presented in the Draft EIR and in this Response to Comments document supports the City's determination that recirculation of a Draft EIR is not required.

Summary of Impacts and Mitigation Measures

Significant and Unavoidable Impacts

Based on the analysis presented in the Draft EIR, the original Project would have resulted in significant and unavoidable environmental impacts related to: 1) increased safety hazards associated with an at-grade rail crossing; 2) exposure of existing and new residents to a reasonably foreseeable and substantial increase in noise from train warning horns at the original Project's proposed Shasta crossing; 3) exposure of new residents to noise from train warning horns at the existing Payran crossing; 4) temporary and periodic noise impacts during construction that were expected to last for a period of more than 1 year and that would exceed 90 dBA Leq; 5) a substantial increase in roadway hazards and hazards for emergency vehicles accessing the site, due to the proposed at-grade rail crossing; and 6) an inconsistency with adopted bicycle and pedestrian system plans, guidelines, policies and standards of the City of Petaluma associated with the proposed at-grade rail crossing.

As indicated in this Final EIR/Response to Comments document, each of these significant and unavoidable impacts associated with the original Project no longer remain applicable to the Revised Project, as summarized below.

- The original Project's increase in safety hazards associated with a new at-grade rail crossing, including hazards to traffic, bicycle and pedestrian crossings at a potentially unsafe location (Draft EIR Impact Haz-6) is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing.
- The original Project's exposure of existing and new residents to reasonably foreseeable future train warning horn noise at the Shasta Avenue Extension's at-grade rail crossing (Draft EIR Impact Noise-3) is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension or at-grade rail crossing.
- Although it had been the City of Petaluma's standard practice (consistent with prior CEQA Guidelines, Appendix G) to consider a project's impact as significant if a project would expose its residents to noise levels in excess of standards established in the City General Plan or Noise Ordinance, recent case law and corresponding revisions to CEQA Guidelines Appendix G (October 2018) have clarified that the effects of the environment (e.g., existing ambient noise levels) on a

project are not to be considered a significant impact under CEQA. Therefore, the exposure of new Project residents to excessive ambient noise associated with train warning horns at the existing Payran rail crossing (Draft EIR Impact Noise-3) is no longer considered a significant environmental impact in this EIR. Nonetheless, this FEIR identifies recommendations to avoid inconsistencies with the City's General Plan policies for land use compatibility by introducing new residents to an area with occasionally elevated noise levels from railroad noise associated with commuter rail and freight rail.

- The City of Petaluma has not officially adopted a numeric threshold for evaluation of temporary increases in noise resulting from a project's construction activities. The construction noise thresholds used in the Draft EIR were derived from the Federal Transit Administration's criteria for construction noise impacts and indicated a significant construction noise impact would occur if construction noise exceeded 90 Leq (dBA) during a one-hour period, and/or if construction noise exceeded 80 Leq (dBA) over an 8-hour period during daytime hours. However, these thresholds are substantially different from those thresholds used in other recent City of Petaluma CEQA documents.[1] For consistency with these other CEQA documents (which have been certified by the City), the construction-period noise impact threshold for this EIR is revised, and now defined as exceeding the ambient noise environment by 5 dBA Leq for a period greater than one year. With required conformance with the City of Petaluma Noise Ordinance and implementation of recommended mitigation measures, all reasonable and feasible noise attenuation strategies will be implemented. The highest noise levels that would be experienced by adjacent sensitive receptors would only occur for a limited duration during construction activity. Not all construction activity associated with the Revised Project would occur in immediate proximity to adjacent neighbors, and construction that does occur adjacent to existing neighbors is unlikely to individually last for more than 1 year. With implementation of all mitigation measures as identified, the exposure of sensitive receptors to excessive noise during construction (Draft EIR Impact Noise-4) will be reduced to a less than significant level.
- The original Project's substantial increase in roadway hazards and hazards for emergency vehicles accessing the site due to the proposed at-grade rail crossing (Draft EIR Impact Transp-7) is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing.
- The original Project's inconsistency with adopted bicycle and pedestrian system plans, guidelines, policies and standards for safety relating to the proposed at-grade rail crossing (Draft EIR Impact Transp-9) is also avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing.

None of the significant and unavoidable impacts of the original Project remain, and the Revised Project does not result in new significant and unavoidable impacts.

Impacts Mitigated to Less than Significant Levels, and Less than Significant Effects

Table 1-1 at the end of this chapter 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 the Draft EIR.

The Revised Project includes a number of modifications to the original Project that the applicant now proposes in response to certain environmental issues raised in the Draft EIR. Some of these modifications serve to avoid environmental impacts that would otherwise have occurred under the original Project such

[1] These prior City of Petaluma CEQA documents include the 2017 Davidon/Scott Ranch Revised Draft EIR, the Rainier Cross Town Connector EIR, the Petaluma Riverfront Development Project EIR, and the Haystack Mixed-Use Project CEQA document.

that mitigation measures recommended in the Draft EIR are no longer required of the Revised Project. Other modifications incorporated into the Revised Project serve to implement mitigation measures that were recommended in the Draft EIR, and which are now not necessary as these measures are fully incorporated. To identify these changes, the following summary Table of Impacts and Mitigation Measures is marked with identifying text as follows:

- Text indicated in ~~grey strike-out~~ indicates this information (or mitigation measure) is no longer applicable to, or required of the Revised Project
- Text indicated in underline indicates new or clarifying information about the Revised Project or applicable mitigation measures, and/or why a mitigation measure is no longer applicable or required under the Revised Project

Organization of this Final EIR

This Response to Comments document contains information about the Revised Project, supplemental environmental information and responses to comments that were raised during the public review and comment period on the Draft EIR. Following this Introduction chapter, the document is organized as follows:

Chapter 2 - Revised Project Description

This chapter provides a brief summary of the original Project and a summary of the significant and unavoidable environmental effects that the original Project would have caused. It also provides a description of those modifications to the original Project that the applicant now proposes in response to the environmental issues raised in the Draft EIR, as well as in response to public comments on the Draft EIR, and City Planning Commission and City Council concerns.

Chapter 3 - Comparative Environmental Assessment of the Revised Project

This chapter provides an assessment of the Revised Project's environmental impacts against the same thresholds used in the Draft EIR to analyze the impacts of the original Project. This chapter also includes an issue-by issue comparison of potential impacts of the original Project that are now avoided or reduced in extent based on the changes and modifications incorporated into the Revised Project.

Chapter 4 - Master Responses to Frequent Comments on the Draft EIR

This chapter provides comprehensive responses to numerous, similar comments made by several commenters on specific environmental issues relative to the Draft EIR.

Chapter 5 - Individual Responses to Written Comments on the Draft EIR

This chapter contains each letter or correspondence received by the City commenting on the Draft EIR, and provides individual responses to those CEQA-related comments raised. This chapter includes a list of all agencies, organizations and individuals that submitted written comments on the Draft EIR during the public review and comment period.

Chapter 6 - Responses to Comments Made at Public Hearings on the Draft EIR

This chapter contains a summary of oral comments made at each of the public hearings on the Draft EIR, and presents responses to each of the specific CEQA-related comments raised.

Chapter 7 - Revisions to the Draft EIR

This chapter contains text changes and corrections to the Draft EIR as initiated by the Lead Agency in response to changes made pursuant to the Revised Project, or resulting from comments received on the Draft EIR.

Intended Use of this Final EIR

Pursuant to CEQA, the Final EIR is a public information document for use by governmental agencies and the public. The information contained in the Final EIR is subject to review and consideration by the City of Petaluma, prior to its decision to approve, reject or modify the Project. The City of Petaluma City Council must independently certify that they have reviewed and considered the information in the Final EIR and that the Final EIR has been completed in conformity with the requirements of CEQA before making any decision regarding the Project. The Final EIR identifies significant effects that would result from the implementation of the Project.

City of Petaluma Project Approvals

Discretionary Actions

The City of Petaluma City Council will make findings regarding certification of the Final EIR, and the Council or its designated body will make final decisions about the Project's proposed entitlements and discretionary approvals, including:

- A Planned Unit Development (PUD) Amendment to remove the northern portion of the project site (APN 019-010-009) from the 1982 PUD approval for the Oak Creek Apartment project (City of Petaluma Resolution No. 9628, December 1982)
- A Zoning Map Amendment to rezone APN 019-010-009 from that 1982 PUD to R4 (Residential 4), enabling residential development at densities up to 18 units per net developable acre (consistent with the Medium Density Residential General Plan Land Use Designation)
- Subsequent Site Plan and Architectural Review for the development site with up to 205 multi-family residential units and all associated site improvements

Subsequent Approvals

If the City of Petaluma does approve the Project and each of its discretionary approvals, subsequent approvals will be necessary to carry out the Project, including:

- Approval of the administrative mapping process (lot line adjustment or tentative parcel map) reflecting the refined site plan (timing anticipated to be proximal to SPAR approval)
- Approval and recordation of Final Parcel Map (or recordation of Lot Line Adjustment), to include a public access easement for public access to and along a new multi-use trail along the Petaluma River and for pedestrian access on the Bernice EVA
- Public Improvement Plans for new streets, driveways, sidewalks, pathways, EVA(s) and all related public improvements that will occur as part of the Project including both residential development and terracing activities.
- Encroachment permits for construction improvements to the public right-of-way necessary to allow work including on Graylawn Avenue and Bernice Court
- Grading permits as required for the development site and for the terraced grading plan along the banks of the Petaluma River, including approval of a Stormwater Pollution Prevention Plan (SWPPP)

demonstrating conformance with all applicable RWQCB design standards and BMPs and approval of an Erosion Control Plan, prior to issuance of a grading permit

- 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), and demonstration of compliance with the NPDES General Permit for the Discharge of Storm Water from Small MS4s General Permit (SWRCB 2013)
- Building permits for all proposed improvements (apartment buildings, the clubhouse and pool, parking and roadways, etc.)
- Tree removal permits pursuant to Petaluma's Implementing Zoning Ordinance Section 17.060 (such as a grading permit), for removal of certain existing trees necessary to accommodate development of the Project, as well as protective measures for those trees to remain, as necessary to ensure their preservation

Other Regulatory Agency Approvals

The Project also requires certain permits and/or approvals from other outside regulatory agencies. These other agencies (or responsible agencies), which will rely on this EIR for their decision-making process include, but are not limited to the following:

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, 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.

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.

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 applicant shall comply with all the terms and conditions required by the NMFS.

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. 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. The project applicant shall submit a Notice of Intent (NOI), Stormwater Pollution Prevention Plan (SWPPP), and other required permit registration documents to SWRCB.

Sonoma County Water Agency

Improvements related to flood control and terracing along the Petaluma River will also be subject to review and approval of the Sonoma County Water Agency (SCWA) and their Flood Control Design Criteria for the design and construction of drainage structures and facilities.

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Aesthetics		
Visual-1: The Revised 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 Revised Project would not substantially damage scenic resources, including trees, rock outcroppings and historic buildings within a state scenic highway.	**Mitigation Measure Visual-2, Implement Mitigation Bio-10A** (as amended): Limitations on Improvements within the Petaluma River Plan Corridor (see Biology section for details) ~~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 Revised 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 for the Revised Project shall include evaluation and review of the Revised 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. **Visual-3B, Implement Mitigation Bio-10B** (as amended): RODZ review at SPAR (see Biology section for details) **Mitigation Visual-3C, Implement Mitigation Bio-11A** (as amended): Ensure Preservation of Existing Trees (see Biology section for details)	Less than Significant
Visual-4: Development of the Revised Project would create a new source of substantial light or glare, which	**Mitigation Visual-4, Glare Minimization Design Standards:** The following measures shall be applied to reduce light and glare at the Project site:	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
could adversely affect day or nighttime views in the area.	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 that 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.	
Air Quality		
AQ-1: The Revised Project would not conflict with or obstruct implementation of the applicable air quality plan.	None needed.	No Impact
AQ-2: The Revised 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. b) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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) 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.	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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) Require 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.	
AQ-3: Construction of the Revised 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. **Recommendation AQ-3, Construction-Period Criteria Pollutant Emissions**: 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. These measures further serve to reduce construction-period criteria pollutant impacts.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
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 Revised 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.	None needed.	Less than Significant
AQ-6: The Revised Project would not create objectionable odors affecting a substantial number of people.	None needed.	Less than Significant
Biological Resources		
Bio-1: Implementation of the Revised Project would not result in a substantial adverse effect on candidate,	None needed.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
sensitive or special-status plant species, either directly or through habitat modification.		
Bio-2: Implementation of the Revised 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) Tree removal shall be conducted between September 1st and March 31st in order to avoid the bat maternity periods and ensure protection of bat species. 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 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.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	b) Any tree removal with breast diameter height (dbh) greater than 12 inches or with complex bark structures or with 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 Revised 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, either they shall 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. a) Any re-location efforts shall be pre-approved by the resource agencies. b) If CRLF, 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	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 out special-status. 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: • identification of California red-legged frog and their habitat, Western pond turtle and their habitat and 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 will determine the need to enter into consultation with the USFWS for impacts on the	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	federally listed 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 Revised 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 (as amended).** 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 due to Project fill and terrace grading. a) Final site plans should seek to avoid and retain wetland features where feasible b) Compensatory wetland habitat shall ensure no net loss of habitat functions and values. c) Compensatory ratios shall be based on site-specific information and determined through coordination with the Corps and RWQCB. d) 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 Revised Project's proposed terraced grading plan for the banks of the Petaluma River could 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 include a Riparian (Willow) Preservation Zone comprising the approximately 0.30 acres of high quality riparian habitat along the River. Preservation of existing high quality riparian vegetation shall be achieved in these zones while accommodating widened channel designs that provides acceptable flood control containment. The River Plan calls for all development (including grading and flood control alterations) to be severely restricted within high priority Riparian Preservation Zones, all development, including trails, grading and flood control alterations, shall be prohibited in these Zones. Minimal intrusions in a carefully selected location could be authorized by the City for interpretive purposes only. **Mitigation Measure Bio-5B, Riparian Tree Preservation (as amended)**: A consulting arborist shall review preliminary grading plans for the river terrace and for the riverside path, prior to issuance of grading plans. The arborist shall recommend tree preservation measures (i.e., protective fencing, grading limits and tree pruning plans) to ensure preservation of individual riparian and oak woodland trees within and abutting the riparian zone. This measure shall also apply to those riparian zones as expanded by the	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	river terracing project, including trees #65-68, 70-73, 80, 106-107, 209-212 and 205-208, and the 0.30-acre willow thicket designated as the Riparian (Willow) Preservation Zone. **Mitigation Measure Bio-5C, Habitat Mitigation and Monitoring Plan:** A final Habitat 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 Revised Project could 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.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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. 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 Revised 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.)	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 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 Revised 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 Revised 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).	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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.	
Bio-10: The Revised Project could conflict with local policies and ordinances protecting biological resources, including the City's Petaluma River Plan Corridor.	**Mitigation Bio-10A, Limitations on Improvements within the Petaluma River Plan Corridor (as amended)**: No residential structures or directly related residential components 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 2-5). The only improvements allowed within the River Plan Corridor include the river trail, terracing and restoration. During the SPAR process, the Planning Commission could allow minor encroachments associated with residential improvements, such as a detention basin and/or segments of sidewalk within the outer buffer management zone, if found to be consistent with the intent of the River Plan and not impactful to the River Plan Corridor. **Mitigation Bio-10B, RODZ review at SPAR:** The Site Plan and Architectural Review process shall include evaluation and review of the Revised 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.	Less than Significant
Bio-11: The Revised Project would substantially reduce, but could still potentially conflict with local policies and ordinances protecting biological resources, including the City's tree preservation policies and ordinance.	**Mitigation Measure Bio-11A, Ensure Preservation of Existing Trees (as amended):** The final designs of the residential portion of the Project should be designed to reflect the goal of preserving protected trees located within the Petaluma River Plan Corridor and those oaks isolated in the RODZ. 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 final design of the Project, to be reviewed at SPAR, 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) As the Revised Project concept plan depicts, the residential structures shall 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. Within the Petaluma River Plan Corridor, the small California bay (#74) shall also be preserved as a native tree within the Corridor. The eucalyptus (#76) shall be removed as an exotic species undesirable near a riparian setting.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	c) As the Revised Project concept plan depicts, not more than three mature oak trees shall be removed from the RODZ (i.e., within APN-009) to accommodate the Project. The Revised Project's concept plan shows these as oaks #59, 60 and 61. Younger oaks #101 and 202 shall also be preserved. Should the updated arborist review (per Mitigation Measure Bio-11e) finds that any of the large oaks proposed to be preserved by the concept plan is not healthy and a good candidates for preservation, the site plan designed for SPAR shall instead preserve another of the large oaks on APN-009. 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. Tree protection on APN-006 shall be equal to that depicted by the Revised Project's concept plan. Thinning of the redwoods along Graylawn may be authorized by SPAR if recommended by the arborist. The EVA shall be designed to accommodate oaks 1 and 2, but should the Fire Marshal and the arborist find this impossible, SPAR is authorized to allow their removal pursuant to Mitigation Measure Bio 11-B. e) During preparation of the site plan for SPAR, the applicant shall work collaboratively with the arborist and the civil engineer to design a site plan that addresses Bio 11B through 11D. The arborist shall provide further tree preservation analysis as part of the SPAR submittal, and shall ensure that all trees over 4 inches at breast height are included in the analysis. **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: • 24-inch box replacement tree = 2-inch replacement trunk diameter	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance

- 36-inch box replacement tree = 3-inch trunk replacement diameter
- 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 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 to be preserved within the Project to protect them during on-site grading and construction. A conceptual tree protection plan for the Project shall be provided for SPAR review, and a final tree protection plan for the Project shall be included as part of all Public Improvement Plans and grading permits issued for the Project. The following tree protection measures from the River Plan shall implemented:

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.

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 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.	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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. 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	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 plant materials hosting Phytophora ramorum 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 and prior to Public Improvement Plan approvals and grading permit issuance, all trees of "at-risk" species proposed for removal 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, if 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. 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.).	Less than Significant
Cultural Resources		
Cultural-1: The Revised 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	**Mitigation Measure Cultural-1: Monitoring of Well Abandonment.** When 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	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
result in a potentially significant impact to historical resources unless mitigated.	that the onsite wells are abandoned and capped in place, then monitoring would be unnecessary, as no disturbance to potential resources would occur.	
Cultural-2: The Revised Project has the potential to affect adversely the significance of undiscovered archeological or Tribal cultural resources.	**Mitigation Measure Cultural-2: Discovery of Unknown Archaeological Resources and Tribal Resources (as amended).** To reduce potential impacts on prehistoric site deposits and or Tribal cultural resources that may be discovered during construction: a) The applicant shall retain the services of a qualified archaeological consultant approved by the City of Petaluma and from the Federated Indians of Graton Rancheria's list of qualified archaeologists who have also demonstrated the ability to work cooperatively with the Tribe, 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 affect significant archeological deposits or Tribal cultural resources. After considering the types of project activities and the probabilities of encountering a significant archaeological deposit or Tribal cultural resource, 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, cultural soils or Tribal cultural resources is encountered during construction anywhere on-site, all soil-disturbing activities within 100 feet of the discovery shall cease. The archaeological monitor shall have the authority to stop work and temporarily redirect crews and heavy equipment until the resource 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 the identity, integrity and significance of the encountered resource, present the findings of this assessment to the City and provide treatment recommendations.	Less than Significant
Cultural-3: The Revised Project has the potential to affect adversely 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	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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.	
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 believed 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
Cultural-5: The Revised 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, and impacts of the Project on currently unknown Tribal cultural resources would be less than significant.	Less than Significant
Geology and Soils		
Geo-1: The Revised 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

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Geo-2: The Revised 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 or the most recent edition at the time of development. These standards include 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:** The recommendations of 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 Project'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 Revised 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 Revised 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
Geo-5: Portions of the Revised 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:	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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.	
Geo 6: The Revised 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. 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 identify locations for vehicle and equipment staging, portable restrooms, mobilization areas, and 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.	Less than Significant
Geo-7: The Revised Project would not be supported by the use of septic tanks or alternative wastewater	None needed.	No Impact

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
disposal systems that would be reliant upon appropriate soil capabilities.		
Geo-8: Development of the Revised 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** as set forth in Chapter 5, provides for implementation of these BMPs, which would reduce construction-period GHG emissions.	Less than Significant
GHG-2: The Revised 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 Revised 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
Hazards and Hazardous Materials		
Haz-1: The Revised Project site is not located on a site 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-1A, Soil Testing and Regulatory Compliance (as amended)**: Prior to issuance of building or grading permits, the project applicant shall conduct a soil testing program to identify the potential for agricultural chemicals, agriculture-related petroleum hydrocarbon spills, lead-based paint or elevated levels of contaminants near the rail tracks to be present in the soils at levels exceeding recommended health screening levels. Should any impacted soil be discovered that exceeds human health screening levels for residential soil as noted in DTSC's HERO HHRA Note 3 criteria 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

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	Mitigation Measure Haz-1B, Discovery of Unknown Contaminants (as amended): If unknown contamination, underground tanks, containers or stained or odorous soils are discovered during construction activities, appropriate investigation, sampling and comparison of data collected with health-based screening levels and/or consultation with a regulatory oversight agency shall be conducted.	
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 Revised 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 **Mitigation Measure Hydro-1: SWPPP Requirements** (see Chapter 11: Hydrology).	Less than Significant
Haz-4: The Revised Project will not produce hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste that could affect an existing or proposed school.	None needed.	Less than Significant
Haz-5: The Revised Project would result in increased hazards associated with increased presence along the rail racks.	**Mitigation Measure Haz-5, Fencing (as amended)**: As demonstrated in the Revised Project's conceptual design, the Project shall include an open-design appropriate fence along the edge of and parallel to the rail tracks, with consideration provided to the protection of existing trees, to limit access onto the railroad right-of-way. The final fence design shall be subject to SPAR review and approval.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
Haz-6: The Revised Project would not result in increased hazards associated with a new at-grade rail crossings, including traffic, bicycle and pedestrian crossings at a potentially unsafe location.	None needed. The Draft EIR's Impact Haz-6 is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing. ~~**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.~~ ~~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.~~	Less than Significant ~~***Significant and Unavoidable***~~
Haz-7: The Revised Project provides adequate emergency access to the future residential development site.	None needed. However, based on the recommendations of the City of Petaluma Fire Marshal, the following Recommendation is added to this EIR. **Recommendation Haz-7, EVA Design**: To ensure that the Bernice Court EVA is continuously available for emergency use, the EVA connection at Bernice Court shall include design measures including, but not limited to bollards, red curb or red pavement striping, no-parking signage, etc., intended to prohibit parking and other obstructions at this EVA access. Final EVA design measures shall be subject to review and approval by the Fire Marshal.	Less than Significant
Hydrology and Water Quality		
Hydro-1: During construction, the Revised Project could alter existing drainage patterns of the site in a manner that could result in substantial erosion or siltation, and provide substantial additional sources of polluted runoff.	**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 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;	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 the Revised Project's 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. 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.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 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 Revised 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	None needed.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
regulated floodplain (i.e., within a 100-year flood hazard area as defined on applicable FEMA Flood Insurance Rate Maps).		
Hydro-4: The Revised Project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, nor would it create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.	None needed.	Less than Significant
Hydro-5: The Revised 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 Revised Project will not draw upon or otherwise reduce groundwater resources.	None needed.	Less than Significant
Hydro-7: The Revised 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 Revised 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
Land Use		
LU-1: Development of the Revised Project 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 (as amended)	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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: Limitations on Improvements within the Petaluma River Plan Corridor (also listed as Mitigation Measure Visual-2) Mitigation Bio-10B: RODZ review at SPAR Mitigation Measure Bio-11A: Ensure Preservation of Existing Trees (as amended) Mitigation Measure Bio-11B: Protected Tree Replacements Mitigation Measure Bio-11C: Tree Protection Plan	
Noise		
The Revised Project would not generate noise levels in excess of applicable standards. The Revised Project could expose new residents to reasonably foreseeable future train noise levels in excess of the standard of 65 dBA CNEL for multi-family residential uses as established pursuant to the Petaluma General Plan 2025, to noise levels that might exceed the 60 dBA Ldn threshold established by the FTA for outdoor use, and/or to the noise levels that may exceed the indoor noise standard of 45 dB Ldn s established in the California Noise Insulation Standards found in CCR Title 24. These effects of existing and/or future ambient noise on the Project are not significant impacts caused by the Project.	None Needed. However, to avoid inconsistencies with City General Plan policies for land use compatibility with community noise environments, to reduce the exposure of primary outdoor use areas to below FTA regulatory guidance levels and to achieve noise conditions inside buildings at levels consistent with the California Noise Insulation Standards found in CCR Title 24, the following recommendations are provided: **Recommendation Noise 1A, Ensure "Conditionally Acceptable" Noise Levels (as amended)**: No residential structure should be located closer than the calculated 65 dB CNEL contour. Based on existing rail noise levels, the 65-dBA CNEL noise contour is estimated to occur at approximately 30 feet from the center of the near set of railroad tracks. Based on potential future conditions (assuming increased freight rail traffic), the calculated 65 dB CNEL contour is estimated to be at 54 feet from the center of the near set of railroad tracks. The final design of the Project, to be reviewed at SPAR, should maintain a 54-foot setback from the center of the near set of railroad tracks. **Recommendation Noise-1B, Noise Insulation (as amended):** 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 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.	No Impact

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	Recommendation Noise 1C, Ensure Normally Acceptable Outdoor Noise Exposure (as amended): No primary outdoor use area (i.e., the swimming pool and courtyard or active play areas), should be located closer than the calculated 60 dB CNEL contour. Based on existing rail noise levels, the 60-dBA CNEL noise contour is estimated to occur at approximately 60 feet from the center of the near set of railroad tracks. Based on potential future conditions (assuming increased freight rail traffic), the calculated 60 dB Ldn contour is approximately 109 feet from the tracks. The final design of the Project, to be reviewed at SPAR, shall not locate any primary outdoor use areas (i.e., the swimming pool and courtyard or active play areas) closer than 109 feet from the center of the near set of railroad tracks. Alternatively, the Revised Project's final design should incorporate noise attenuation into the design of any primary outdoor use areas closer than 109 feet that may include a fence or wall measuring at least 6 feet high and subject to SPAR approval, or placing primary outdoor use areas on the opposite side of a residential structure from the rail line.	
The Revised Project would not generate groundborne vibration levels in excess of established thresholds. The Revised Project could expose new residents to reasonably foreseeable vibration levels in excess of limits established by the FTA and FRA for subjective human reactions to ground-borne vibrations. The effects of existing and/or future train-related vibration levels on the Project are not significant impacts caused by the Project.	None needed. However, to avoid inconsistencies with FTA and FRA regulatory guidance regarding exposure to groundborne vibrations near transit or rail facilities, the following recommendation are provided: **Recommendation Noise 2, Avoidance/Vibration Attenuation Measures (as amended)**: The Project should incorporate the following vibration avoidance or reduction strategies as part of its final design and/or construction. a) The Revised Project's proposed 54-foot residential set back from the centerline of the nearest set of rails more than adequately meets the FTA 75 VdB criteria for the "occasional" SMART train events that now occur and that is expected to occur in the future (i.e., between 30 and 70 SMART trains per day), and should be retained. b) The Revised Project's proposed 54-foot residential set back from the centerline of the rails is also adequate to meet the FTA 80 VdB criteria for the "infrequent" heavy freight rail traffic that now occurs and that is expected to occur in the future. This 54-foot setback also accommodates an additional "penalty" threshold (down to the "occasional event" criteria of 75 VdB) to address the potential for longer duration and/or nighttime vibration events, and should be retained. c) To address an even more conservative vibration criterion as was applied in the NCRA Russian River Freight EIR, the City of Petaluma could consider an additional "penalty" threshold to meet the "frequent event" criteria of 72 VdB, which occurs at approximately 100 feet from the rail centerline. To meet this more stringent criterion, structural design measures could be incorporated into the design and construction of residential buildings located closer than 100 feet from the tracks, as necessary to reduce groundborne vibration to below the 72 VdB criteria. Special	No Impact

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	building methods can be incorporated to reduce groundborne vibration from being transmitted into project structures.	
Noise-3: The Revised Project would not expose existing or new residents to reasonably foreseeable future train horn noise levels above levels existing levels without the Project.	None needed. The Draft EIR's Impact Noise-3 is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing. ~~**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 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.~~	Less than Significant ~~***Significant and Unavoidable***~~
Noise-4: Construction of the Revised Project would result in temporary or periodic noise impacts, but construction noise is not anticipated to exceed the ambient noise environment by 5 dBA Leq for a period greater than one year. Not all construction activity associated with the Revised Project would occur in immediate proximity to adjacent neighbors, and construction that does occur adjacent to existing neighbors is unlikely to individually last for more than 1 year.	**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:	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 minimize noise levels at the closest residential receptors. b) If impact equipment such as jackhammers, 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 to be inaudible beyond the limits of the project site boundaries. **Mitigation Measure Noise-4E, Noise Barriers (as amended):** 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	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	Bernice Court, Graylawn Avenue and Jesse Avenue to shield these existing sensitive receptors from construction noise. To the extent feasible, the construction contractor shall prioritize construction of buildings nearest to Graylawn/Bernice Court during the earlier phases of construction, such that new buildings can serve as a noise barrier to dampen construction noise as the site develops. **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: Noise generated by use and occupation of the Revised Project by new residences is not expected to significantly increase or alter the existing noise environment.	None needed.	Less than Significant
Noise-6: Traffic generated by the Revised 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		
Without the Shasta Extension, traffic generated by the Revised Project will only be able to use Graylawn Avenue for access to the site. Although the addition of all traffic generated by the Revised Project 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 traffic engineering recommendations are provided as information relevant to options for addressing the Revised Project's potential conflicts with the City's 2,000 ADT design standard for Graylawn Avenue as a residential road: **Recommendation Transp-A, Reduce Revised Project Size to Fit Graylawn Capacity**: If the Revised Project were to be reduced in size to approximately 108 residential units, it would produce approximately 858 daily trips, 52 AM peak hour trips, and 64 PM peak hour trips. This number of additional trips could be accommodated, in addition to the	Not a CEQA Impact

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	existing 1,142 daily trips currently on this roadway, such that the ADT would not exceed the City of Petaluma Department of Engineering's Street Standard Design. OR - **Recommendation Transp-B, Introduce Traffic Calming and Enhance Livability along Graylawn Avenue**: The Revised Project shall implement a Traffic Calming Plan, which may include bulb outs, street tree planting, pavement marking and other roadway livability improvements and traffic calming features to minimize conflicts with "livability" standards for local streets that exceed the 2,000 ADT design standard for this roadway. Prior to SPAR review at the Planning Commission, the applicant shall coordinate with City Public Works staff on the preferred Traffic Calming approach and design (anticipated to be similar in nature to Concept 3 as shown in the conceptual Traffic Calming Plan of Appendix A). The preferred Traffic Calming Plan shall be shown on the plan set for SPAR review. The Public Improvement Plan set for the Revised Project shall include the finalized Traffic Calming Plan.	
Transp-1: The addition of traffic generated by the Revised Project 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 traffic generated by the Revised Project to the Pipeline scenario (without the Project) would not 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
Transp-3: The addition of traffic generated by the Revised Project to the Cumulative scenario (without the Project) would not result in a cumulatively significant contribution of traffic at any study area intersections.	None needed. The Revised Project no longer proposes the Shasta Avenue Extension and will not directly contribute substantial additional, cumulatively significant traffic to the westbound approach to the Petaluma Boulevard/Shasta Avenue intersection. The Revised Project will be subject to the City's Traffic Impact Fees, which are collected to fund ongoing maintenance and planned improvements citywide, including the Rainier Crosstown Connector and associated improvements. ~~**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. These improvements would improve the intersection to LOS C in the PM peak hour under~~	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	~~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 Project's proposed Shasta Avenue Extension 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.~~	
Transp-4: Traffic generated by the Revised Project 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: Traffic generated by the Revised Project, when added 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: Traffic generated by the Revised Project, when added 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
Transp-7: The Revised Project would not substantially increase roadway hazards and hazards for emergency vehicles accessing the Project site, as it does not propose an at-grade rail crossing.	None needed. Impact Transp-7 is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing. However, based on the recommendations of the City of Petaluma Fire Marshal, the following Recommendation is added to this EIR. **Recommendation Transp-7, EVA Design**: To ensure that the Bernice Court EVA is continuously available for emergency use, the EVA connection at Bernice Court shall include design measures including, but not limited to bollards, red curb or red	Less than Significant ~~***Significant and Unavoidable***~~

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	pavement striping, no-parking signage, etc., intended to prohibit parking and other obstructions at this EVA access. Final EVA design measures shall be subject to review and approval by the Fire Marshal. ~~**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);~~	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 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	
Transp-8: The Revised Project does not include a Shasta Extension to Graylawn Avenue, and will not substantially increase traffic on the existing sub-standard street section of Shasta Avenue.	None needed. Impact Transp-8 is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing. **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 parking lanes	Less than Significant
Transp-9: The Revised Project does not propose an at-grade rail crossing that would otherwise result in unsafe pedestrian and/or bicycle traffic flow patterns that would be in conflict with the Petaluma General Plan 2025 Mobility Report goals and policies.	Mitigation Measures Transp-9A and -9B are not needed. The original Projects' inconsistency with pedestrian and bicycle safety policies pursuant to Impact Transp-9 is avoided by the Revised Project's site plan, which does not include the Shasta Avenue extension and at-grade rail crossing. **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	Less than Significant ***Significant and Unavoidable***

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	~~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;~~ ~~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~~	

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	~~announcements, educational initiatives, school presentations, posting of all rail safety laws, etc., all sponsored by the Project applicant.~~ The following Mitigation Measure from the Draft EIR, recommended to improve pedestrian and bicycle safety for at the existing Payran Street at-grade rail crossing, has been implemented by SMART as part of their Payran Pathway project, and is no longer necessary for the project: ~~**Mitigation Measure Transp-9C: At Grade Rail Crossing Safety Measures at Payran Avenue.** 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.~~	
Transp-10: The Revised 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. Mitigation Measures 9A through 9-C (above), recommended to improve access to transit have either already been implemented by SMART or are no longer necessary for the Revised Project:	Less than Significant
Transp-11: The on-site circulation plan provides adequate design to accommodate emergency vehicles accessing and circulating within the Revised Project site.	None needed.	Less than Significant
Transp-12: The Revised 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)	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
	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 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 Revised 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 Revised 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 offset its contribution to cumulative water demands to a less than significant level.	Less than Significant
Utilities-2: The Revised 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	None needed.	Less than Significant

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

Potentially Significant Impacts	Mitigation Measures	Resulting Level of Significance
that it has inadequate capacity to serve the Revised Project's projected wastewater treatment demand in addition to existing commitments.		
Utilities-3: The Revised 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 Revised Project would not result in the construction of new water, sewer or stormwater drainage facilities or the expansion of such facilities that would cause significant environmental effects.	None needed.	Less than Significant
Utilities-5: The Revised 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 Revised 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 Revised 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: Operation of the Revised Project would not significantly increase peak and base-period electricity demand.	None needed	Less than Significant

2
Revised Project Description

Original Project

In March of 2018, the City released a Draft Environmental Impact Report (Draft EIR) that evaluated potential environmental impacts associated with development of a then-proposed Sid Commons Apartments Project (original Project). The original Project site (site) is 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 Corporation. The Project applicant was 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. The Project as analyzed in the Draft EIR included a conceptual site plan for the original Project with 278 apartment units provided in multiple three-story structures. The arrangement of the site plan was anticipated to be refined during a subsequent Site Plan and Architectural Review process, but this conceptual site plan formed the basis of analysis of the original Project in the March 2018 Draft EIR.

As indicated on page 3-29 of the Draft EIR, "City staff [had] several concerns about the feasibility of the Project as proposed, and communicated those concerns to the applicant team during the environmental review process. More specifically, staff [had] concerns about the validity of certain assumptions underlying the Project's design, and as a result, [had] concerns about the Project's overall feasibility." Staff concerns related to the Original Project's proposal for an at-grade crossing over the railroad and inconsistencies with the Petaluma River Access and Enhancement Plan, as detailed below. Despite these concerns, the City of Petaluma agreed to continue processing the Project and to conduct the environmental review as contained in the Draft EIR.

Significant Conclusions from the Draft EIR

Shasta Avenue Rail Crossing

The original Project had proposed accesses to the site via existing Graylawn Avenue, with an EVA at Bernice Court, and by the creation of an extension of Shasta Avenue from its current terminus on the west side of the SMART railroad tracks near the intersection of North Petaluma Boulevard. As then proposed, the Shasta Avenue extension was an at-grade crossing over the rail tracks, extending the roadway through to the Project site to a new connection at Graylawn Avenue. The proposed at-grade railroad crossing at the Shasta Avenue Extension would require approval by the California Public Utilities Commission (CPUC). The CPUC had already indicated in their 2007 letter responding to the City's NOP for the Draft EIR that CPUC staff would oppose an at-grade crossing, and reiterated that position in a December 4, 2015 letter to the City of Petaluma.

The Draft EIR recognized the inherent conflicts between the CPUC staff position and the proposed at-grade rail crossing. The Draft EIR concluded that the proposed at-grade crossing would result in increased hazards including traffic, bicycle and pedestrian crossings at a potentially unsafe location. It also concluded that the proposed at-grade crossing would substantially increase roadway hazards and hazards for emergency vehicles accessing the Project site and would create an inconsistency with Petaluma's adopted bicycle and pedestrian system plans, guidelines, policies and safety standards. The Draft EIR indicated that the original Project's at-grade crossing would expose existing and new residents to reasonably foreseeable future noise

from wayside warning horns at the proposed Shasta crossing. Even with establishment of a Quiet Zone, noise from additional wayside horns at the Shasta crossing would adversely affect new and existing residences.

The Draft EIR recommended mitigation measures that included replacing the at-grade crossing with a grade-separated bridge. However, a decision to construct a bridge is not within the jurisdiction of the City of Petaluma alone and specifically requires CPUC approval. The applicant proposed no such bridge structure, and implementation of such a bridge could not be assured. As such, the Draft EIR considered each of these impacts to be significant and unavoidable effects of the original Project.

Graylawn Avenue Capacity

The Draft EIR identified Graylawn Avenue as a locally designated roadway. Pursuant to the City of Petaluma Department of Engineering's Street Design and Construction Standards & Specifications, local residential roadways are intended to carry up to a maximum average daily traffic (ADT) of 2,000 trips, serving up to 200 dwelling units. Traffic counts collected in November 2015 determined that the then-existing average daily two-way traffic (ADT) on Graylawn Avenue to be 954 vehicles. Under the original Project (the Shasta Extension and at-grade extension to Petaluma Boulevard North was presumed to be granted), and the Draft EIR concluded that approximately one-third of the original Project's traffic would use Graylawn Avenue. With the addition of the original Project's Graylawn trips, total traffic on Graylawn would increase to approximately 1,630 ADT,[1] and the original Project's vehicle trips could be accommodated within the 2,000 ADT standard. The Draft EIR did not identify the City's residential street standard as CEQA thresholds, but rather this standard provided a relative means of measuring the "livability" of local residential streets as related to increased traffic.

The Draft EIR also presented a different scenario, whereby all traffic generated by the original Project would only have primary ingress and egress via Graylawn Avenue. Under this scenario, the Draft EIR found that the original Project would generate an additional approximately 1,808 daily trips on Graylawn Avenue, resulting in 2,762 ADT (more trips than the 2,000 ADT residential roadway standard). The Draft EIR recognized that, for residents living along Graylawn Avenue, this increase in traffic would be a significantly noticeable increase of nearly three times as much traffic than was counted in 2015. However, the Draft EIR (page 14-70) concluded that, if all traffic generated by the original Project were to rely on Graylawn Avenue as the only means of ingress and access, this would not cause the intersection of Graylawn Avenue/Payran to operate at unacceptable LOS conditions. Side-street intersections along the Graylawn corridor would have lower traffic volumes than Graylawn Avenue/Payran, and the original Project would not have significantly increased vehicle delay at these locations either.

Conflict with the Petaluma River Access and Enhancement Plan

The Petaluma River Access and Enhancement Plan (River Plan) restricts new development from intruding into the Petaluma River Plan Corridor, which is comprised of a Preservation, Restoration and Buffer zone along the River. The Draft EIR determined that the original Project would have resulted in removal of several mature oak trees, encroachment of development within the River Corridor, and the filling of wetlands. These actions would have conflicted with the River Plan's policies for protection of the River Corridor.

The Draft EIR recommended mitigation measures to address these River Plan inconsistencies. These measures called for preservation of high quality riparian vegetation by restricting development in the High-Priority Riparian Preservation Zone (MM Bio-5A), precluding residential development from the River Plan's Corridor (MM Bio-10A), preserving and/or creating replacement wetlands, and better preserving protected trees, particularly those trees located within the River Plan Corridor (MM Bio-11A). Implementation of these

[1] Presuming that approximately 1/3 of the original Project generated travel would utilize Graylawn Avenue and 2/3 would utilize the Shasta Avenue Extension and then the proposed at-grade crossing.

mitigation measures would necessitate a refinement to the conceptual site plan proposed under the original Project.

Revised Project

In response to these significant environmental conclusions and in response to public comments on the Draft EIR (including City Planning Commissioner's and City Council members' concerns raised during the Draft EIR public comment hearings) the Project applicant has proposed a revised conceptual site plan for the site (the Revised Project). A detailed description of the Revised Project follows.

Revised Project Site

The Revised Project site (site) comprises the same 19.24 gross acres of land as was included in the original Project. This includes 14.33 acres within the portion of Parcel Map #307 that are located on the west side of the River and identified as a "Remainder Parcel" (principally APN 019-010-009), together with a 4.39-acre parcel known as the Webb parcel (APN 019-010-006), plus the 0.52-acre Graylawn Avenue turnaround (APN 019-010-008). The site is located in the City of Petaluma at the northern terminus of Graylawn Avenue, northwest of the existing Oak Creek Apartments (see **Figure 2-1**).

Revised Project Site's Relationship to Floodway, Floodplain and River Setbacks

As analyzed in the Draft EIR, the site is subject to several regulatory and policy requirements pertaining to properties adjacent to the Petaluma River (see **Figure 2-2**).

Floodway

The Floodway Zone (or FW Zone) applies to approximately 2.02 acres of APN -009 within the portion of the site that fronts onto the Petaluma River. Like the original Project, the Revised Project does not propose any new inhabited structure within the Floodway Zone, but does propose grading for a floodway terrace within the Floodway.

Existing Flood Easement/200-Foot River Setback

There is an existing 400' wide hydraulic maintenance and public access easement recorded on Parcel Map #307 (which includes portions of the site) referred to as a Flood Easement. The centerline of the flood easement is generally east of the centerline of the Petaluma River. On site, the Floodway Zone lies entirely within this easement. Like the original Project, the Revised Project does not propose any structure within the Flood Easement. Also like the original Project, work proposed within the Flood Easement pursuant to the Revised Project is limited to flood terracing, habitat restoration, construction of a riverbank trail with access to the River's edge, and installation of an overlook. Each of these improvements is consistent with the hydraulic maintenance and public access description of the Flood Easement.

Petaluma General Plan Policy 8-P-30 establishes this same 200-foot setback from the centerline of the Petaluma River. Like the original Project, the Revised Project does not propose any residential development to occur within this 200-foot setback. The Revised Project proposes only river-related improvements within the River Setback.

Figure 2-1
Revised Project Site (same as original Project Site)

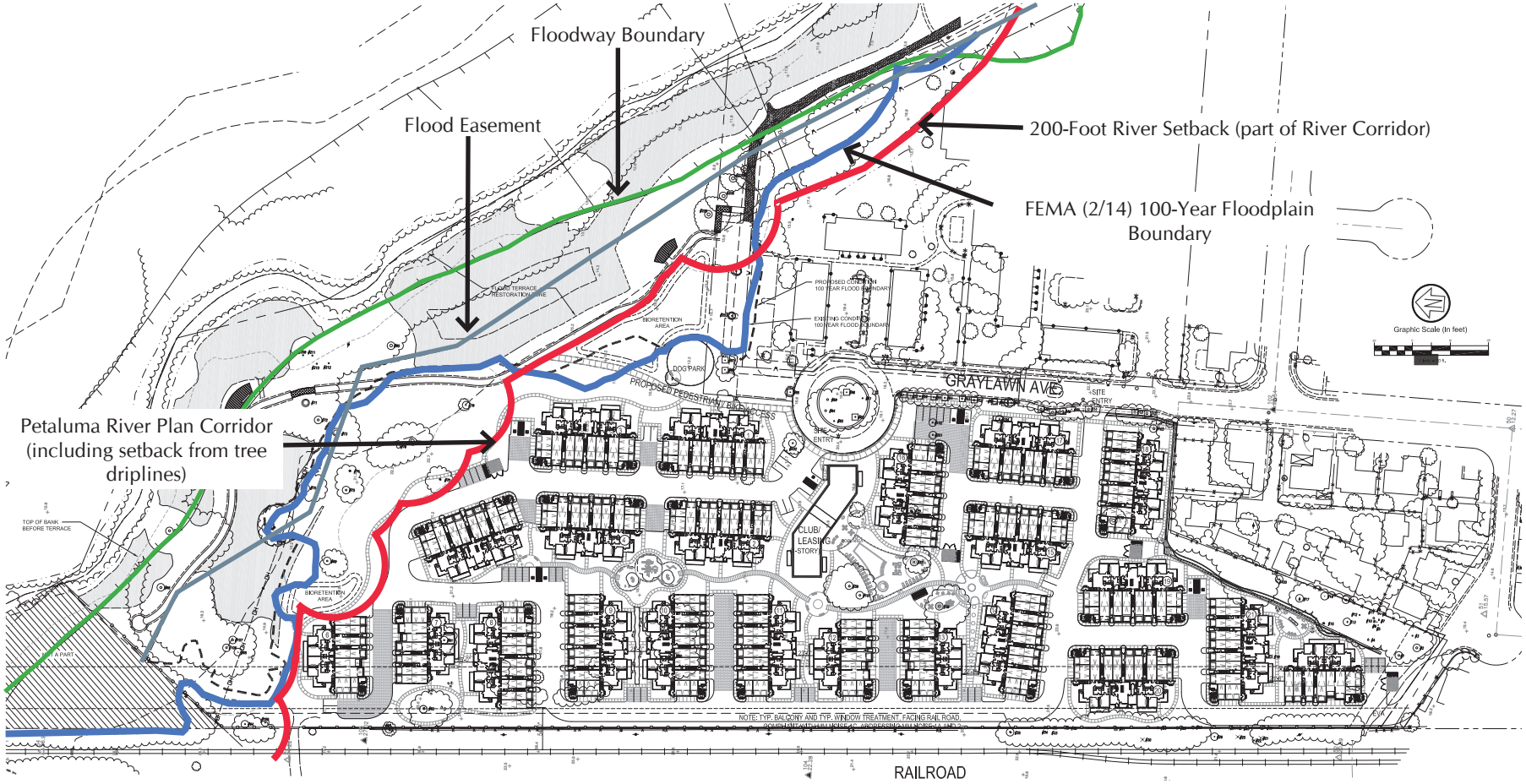


Figure 2-2
Revised Project Site's Relationship to Floodway, Floodplain and River Setbacks

100-Year Floodplain

The National Flood Insurance Program uses FEMA's Flood Insurance Rate Maps (FIRMS) to identify 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 boundary.[2] Like the original Project, the Revised Project does not propose any inhabited structure within the currently effective 100-year flood boundary as established per FEMA's FIRM 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 on those properties upstream of the Payran weir. Chapter 6 Section 6.070 of the Petaluma Implementing Zoning Ordinance (IZO) implements this General Plan policy. Like the original Project, the Revised Project's site plan does not place any new structure or increase fill within the 100-year flood elevation (see further discussion regarding the proposed terraced grading plan, below).

Petaluma River Plan Corridor

The Petaluma General Plan includes a land use designation of River Plan Corridor (alternatively referred to as the River Corridor, or the PRC), which pertains to lands identified as needed to implement the 1996 Petaluma River Access and Enhancement Plan (or River Plan), including floodplain management projects. No new development is permitted within the River Corridor. Within the site, the River Corridor is comprised of three management zones - the Preservation Zone, the Restoration Zone and the Buffer Zone.

Unlike the original Project (which had encroached into the River Corridor), the Revised Project's development plan is pulled back from the Petaluma River banks such that, with the exception of a sidewalk and bio-retention basin, residential development does not encroach into the River Corridor Preservation Zone. This redesign of the Revised Project largely implements Mitigation Measure Bio 11A of the Draft EIR by removing all structures under the concept plan from the River Corridor Preservation Zone (see additional discussion in Chapter 3 of this FEIR under the analyses of the Revised Project's impacts related to Biology and Land Use).

Revised Project Unit Count

The Revised Project includes a conceptual site plan (see **Figure 2-3**) for a 205-unit apartment complex, with the apartment units located within separate two-story apartment buildings, and each apartment building consisting of either seven or 10 individual apartment units. Similar to the original Project, the site plan for the Revised Project also includes a 6,300 square-foot community clubhouse and an outdoor swimming pool. The 205 apartment units are comprised of 39 one-bedroom units and 166 two-bedroom units. The final arrangement of the site plan and architectural design will be refined during the subsequent Site Plan and Architectural Review (SPAR) process, but illustrations of the Revised Project's conceptual building designs, which are architecturally different as compared to the original Project, are included as **Figure 2-4**.

In response to comments expressed during the Draft EIR public comment period that the original Project was too large and generated too much traffic for the surrounding area, the applicant has reduced the amount of development proposed for the site. Whereas the original Project had proposed 278 units, the Revised Project now proposes a total development plan for 205 units, a reduction of 73 units (or more than a 25 percent reduction) as compared to the original Project.

[2] Potential exceptions may be provided if the flood depth is less than 1 foot, 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

Revised Project Plans

The Revised Project includes other substantial differences as compared to the original Project:

- The Revised Project introduces approximately 205 residential dwelling units contained within two-story "Big House" concept developments, whereas the original Project proposed 278 units contained within three-story traditional apartment buildings.
- The Revised Project proposes to provide 10% of the units at the affordable level, comprised of 5% at the low-income level and 5% at the median income level.
- The Revised Project has a more substantial setback from the River, such that it does not encroach into the River Corridor and does not remove any protected tree within the River Corridor area (both eliminating residential development from the River Corridor and revising the terrace design to preserve the two oaks originally proposed to be removed to accommodate the river terrace).
- The Revised Project no longer proposes to construct the Shasta Avenue extension or its at-grade rail crossing, and primary access into the site would only occur from Graylawn Avenue.
- The Revised Project has a more substantial (54-foot) setback from the rail corridor.
- The Revised Project includes an open-design fence along the edge of the rail corridor, and a small branch of the river trail leading to the River edge.
- The Revised Project also provides for substantially greater protection of existing trees than did the original Project.

Many other aspects of the Revised Project, such as utility infrastructure and terraced grading along the riverbank for flood control purposes, remain similar to the original Project, as more fully described below.

Figure 2-3
Revised Project Conceptual Site Plan

Source: Humphries & Partners, January 2019 and Guzzardo Partnership, April 2019

Figure 2-4
Revised Project's Proposed Building Types, Example Elevations

Source: Humphries & Partners, January 2019

Site Access, Circulation and Parking

Primary access into the site would only occur from Graylawn Avenue. Graylawn Avenue would maintain the current 32-foot wide curb-to-curb dimension, and the existing landscaped turnaround would remain. Due to concerns about increased traffic levels, the applicant has voluntarily agreed to incorporate a Traffic Calming Plan into the Revised Project for this roadway and for the adjoining Jess Avenue (see **Appendix A**). Two driveway connections are proposed to connect the Project to Graylawn Avenue. Similar to the original Project, a secondary means of emergency access to the site is proposed via a public access easement at the existing approximately 32-foot wide frontage located at the end of Bernice Court. The Bernice Court connection would be used as an emergency vehicle access (EVA) only, and not as a through street. The Bernice Court EVA is intended to meet all fire apparatus, turning radius and turnaround requirements of the Petaluma Fire Code. The EVA design shall also meet additional recommendations of the City Fire Marshal to prohibit parking and other obstructions, and to ensure that the Bernice Court EVA is continuously available for emergency use (e.g., bollards, red curb or red pavement striping, no-parking signage, etc.). Final EVA design measures, including specific design details demonstrating these requirements will be provided and reviewed pursuant to the SPAR process and subject to review and approval by the Fire Marshal.

In response to safety concerns raised in the Draft EIR and recognition that the CPUC was highly unlikely to issue necessary approvals, the Revised Project no longer proposes an extension of Shasta Avenue across the SMART railroad tracks or its associated at-grade rail crossing. Primary access to the Revised Project is now proposed via existing Graylawn Avenue only, similar to Alternative #4 as presented in the Draft EIR.

An internal roadway/drive aisle provides a looped connection between Graylawn Avenue, providing a vehicle connection to each of the apartment buildings. To serve the 205 new residential units, parking would be provided through a combination of 379 designated parking garage spaces within the apartment buildings, and an additional 51 surface parking spaces located along the internal looped drive aisle, or 430 total parking spaces. This amount of parking reflects an average ratio of 2.1 parking spaces per dwelling unit and approximately 1.2 parking space per bedroom. This amount of parking satisfies the relevant parking requirement of Section 11.060 (Table 11: Dwellings-Multiple Household) of the City of Petaluma Implementing Zoning Ordinance (IZO), which requires an overall parking ratio of no less than 1.5 parking spaces per unit and a minimum of 1 covered or uncovered parking space for each bedroom.

Similar to the original Project, pedestrian improvements proposed as part of the Revised Project include:

- A sidewalk is provided along the east side of the Revised Project frontage along Graylawn, extending north from the current sidewalk terminus. The Revised Project includes a landscape strip between the sidewalk and the street as City Standards direct, enabling retention of existing redwood trees (the original Project did not).
- A riverside pedestrian/bicycle trail extends the full length of the site's frontage along the River, and connects to the existing trail that currently ends at the Oak Creek Apartments. This segment of trail would terminate at the site's northwesterly boundary (east of the SMART rail tracks). Like the original Project, the Revised Project does not explicitly show the path extending all the way to the site's northwesterly property line, but the Project Description and this environmental analysis include the full connection (see DEIR page 3-16). Unlike the original Project, the Revised Project proposes a small branch of the river trail providing access to the River edge.
- A publicly accessible pedestrian/bicycle trail would connect from the Graylawn Avenue turnaround to the Riverside trail

In addition, the applicant has voluntarily agreed to implement a Traffic Calming Plan as part of the Revised Project to address increased traffic on Graylawn and Jess Avenues, intended to slow traffic speeds and increase the livability of the adjacent neighborhoods (see **Appendix A**). The strategies presented within the Traffic Calming Plan are intended to be conceptual in nature and are not intended for immediate

implementation without a community engagement process followed by detailed engineering design. As part of the SPAR process, the Planning Commission will review and consider approval of a final Traffic Calming Plan, specifically determining which traffic calming measures will ultimately be implemented.

Utilities

Water, sewer, electricity, natural gas, telephone and cable services are available either at or near the site. Serving the site will not require service main extensions. Similar to the original Project, water and sewer laterals will serve the new 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.

Stormwater Management

Storm runoff from the Revised Project site will be collected within an underground storm drain system. One system will collect stormwater runoff from the majority of the development site. This drainage system will first discharge via an outfall into a new stormwater detention basin constructed north of the existing Oak Creek Apartments, where the stormwater will receive water quality treatment via bioretention. The new bioretention basin will discharge via two riprap outlets into existing and newly created wetland areas within the Revised Project's terraced grading along the River, and ultimately flow out of these wetland areas over weirs and onto the bank of the River, where it will seep and flow into the River. A second, similar but smaller storm drain system will collect drainage from the most northwesterly portion of the development site. This system also includes a separate bioretention basins and system of newly created wetlands that ultimately discharge overflow over a weir at the lower bank of the River.

Consistent with Provision C.3 of the National Pollutant Discharge Elimination System (NPDES), surface runoff will be directed through graded swales and bio-retention facilities within the development area to provide passive filtration prior to discharge, where possible.

Grading and Restoration

Development Area Grading

Similar to the original Project, the grading plan for the Revised Project provides for a general leveling of the site by lowering the most southerly portion of the site and raising the northerly portion of the site nearest to the River. The finish grade across the Project site will retain the south-to-north slope toward the River. The development site will be sub-excavated to remove existing vegetation and the sub-excavated area will be scarified and re-compacted.

To provide greater consistency with Petaluma River Plan policies and Petaluma's Tree Ordinance, the grading plan for the development area within the River-Oriented Development Zone (APN-009) and within APN-006 has been redesigned in an effort to preserve more of the desirable and significant healthy trees. This redesign of the grading and development plan provides for greater preservation of oak trees than was achieved under the original Project. The grading and development plan of the Revised Project is also pulled back further away from the River, which retains all protected trees within the Petaluma River Plan Corridor (see **Figure 2-5**). The Revised Project's redesigned grading plan substantially implements Mitigation Measure Bio-11 of the Draft EIR (see additional discussion in Chapter 3: Analysis of the Revised Project related to Biology).

Figure 2-5
Revised Project's Relationship to River Plan Corridor and Environmental Constraints

Petaluma River Terraced Grading Plan

The Petaluma General Plan Policy 8-P-28 provides that, "the area [adjacent to the Petaluma River] upstream of the Corps weir and below the confluence of Willow Brook Creek, and located within the floodplain, shall include a Petaluma River Corridor set-aside for the design and construction of a flood terrace system." The purpose of the flood terrace system is 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." Consistent with this General Plan policy and similar to the original Project, the Revised Project includes a terraced grading plan for the segment of the Petaluma River bank within the Revised Project site, and extending approximately 300 feet onto the adjacent Oak Creek Apartments parcel.

The Revised Project includes a terraced grading plan that is similar to that of the original Project, involving re-grading of the western bank of the River to improve flood capacity and flow efficiency (see **Figure 2-6**). The terraced grading plan is separated into three areas: the lower reach terrace, the middle reach terrace, and the upper reach terrace. Grading for the lower terrace is very similar to that proposed pursuant to the original Project, designed to minimize affects to an existing grove of trees and to retain the larger on-site wetland. Grading for the mid terrace provides for the creation of a new wetlands area on the terrace bench, and has been modified to avoid removal of a protected oak tree (#67) that the original Project had proposed removing. Grading for the upper terrace also provides for the creation of a new wetlands area on the terrace bench and has been modified to avoid removal of a protected oak tree (#80). These revisions serve to preserve greater numbers of protected trees to the extent feasible, while still accommodating the intended channel widening and flood control objectives.

The Revised Project's terraced grading concept still accommodates an overall widened channel design. Like the original Project, grading for the Revised Project's terracing plan would generally include a gradual slope from the low-flow channel of the River rising between 5 to 10 feet in elevation to a berm, with a steeper banked slope from the berm to meet existing grade at the upland portion of the site. Grading for the Revised Project's Terracing Plan would still result in substantial cuts along the western riverbank. Approximately 20,250 net cubic yards (CY) of material would be removed from the channel banks, as compared to 21,140 CY of cut material pursuant to the original Project (or approximately 4 percent less cut). A portion of this total cut material would be redistributed onto the upper development-portion of the site, but a net surplus of approximately 15,500 CY of material will need off-site export. Pursuant to City General Plan policy and Section 6.070 of the IZO, the Revised Project's grading plan would reduce (not increase) fill within the 100-year flood zone.

Restoration/Habitat Mitigation Monitoring Plan

The Habitat Mitigation Monitoring Plan (HMMP) prepared for the original Project would become part of the Revised Project. The HMMP 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 includes plans for removal of invasive monocultures of Himalayan blackberry patches, creation of new floodplain terraces, creation and restoration of riparian habitat, creation of new perennial and seasonal wetlands habitat as mitigation for impacted wetlands, and revegetation of the graded and re-contoured terrace area with native riparian vegetation. The change in terrace grading that is needed to preserve two protected valley oak trees results in slightly less created wetlands than had been proposed pursuant to the original Project, but the 0.47 acres of created wetlands will still exceed the functions and values of the approximately 0.34 acres of seasonal wetland proposed to be filled by the Revised Project. Consistent with the Petaluma River Plan, the HMMP's planting plan provides for restoration of the riverbank with new transitional habitat.

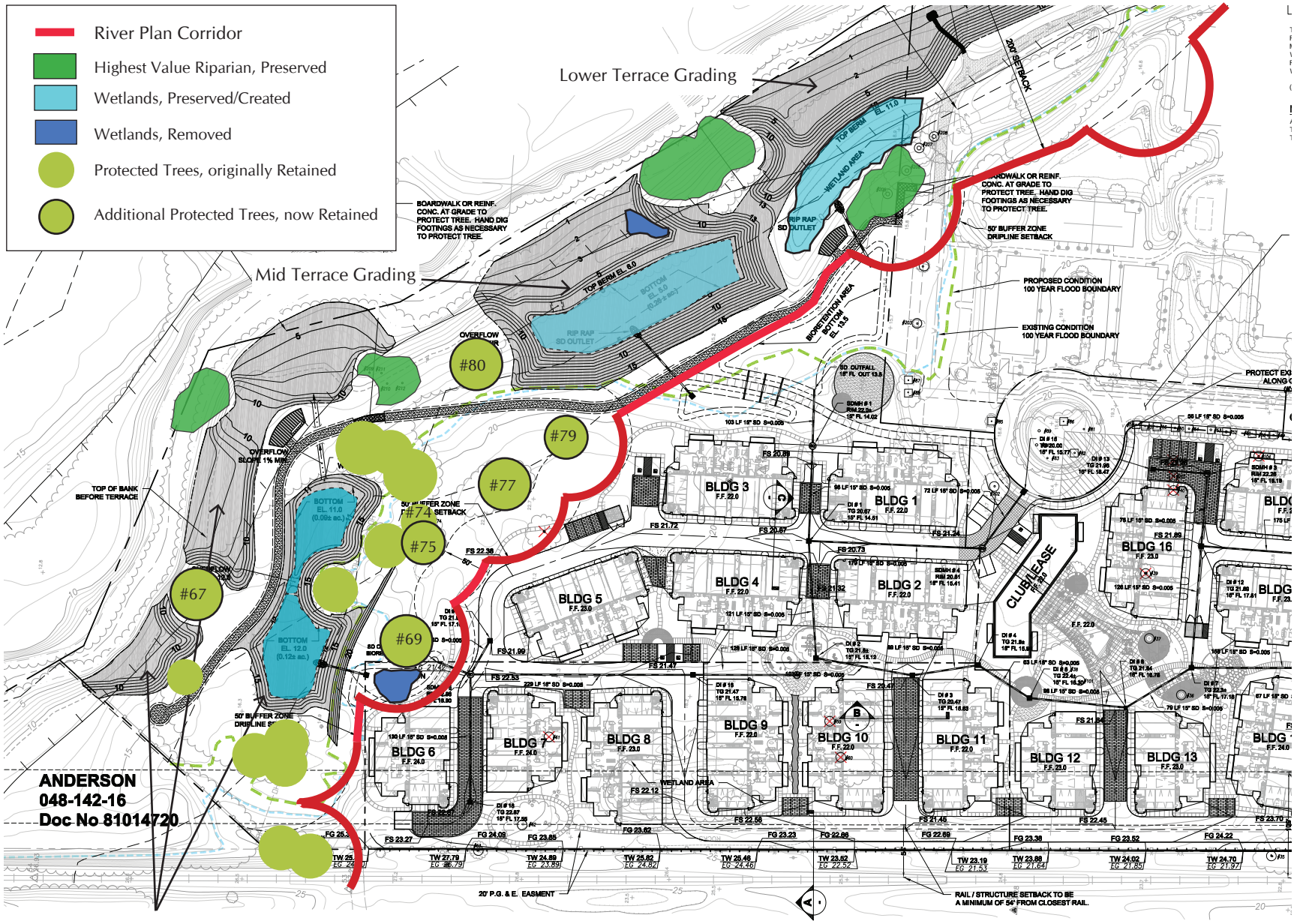


Figure 2-6
Revised Project's Terraced Grading Plan

3

Comparative Environmental Assessment of the Revised Project

As indicated in the previous chapter of this Final EIR, the Project applicant has prepared a Revised Project in response to environmental issues raised in the Draft EIR, as well as in response to public comments on the Draft EIR, and City Planning Commission and City Council concerns raised during the Draft EIR public hearing process. The following analysis provides an assessment of the Revised Project's environmental impacts, and as compared to the potential impacts that would have occurred under the original Project.

The following comparative analysis focuses on those environmental impacts that are substantially different from conclusions as presented in the Draft EIR based on changes made pursuant to the Revised Project, including increased setbacks from the River and railway corridor, removal of the Shasta Avenue Extension and it's at-grade rail crossing, and a reduction in residential density from 278 units to 205 units. To the extent that mitigation measures from the Draft EIR (as may be modified) still apply to the Revised Project, or new mitigation measures and non-CEQA recommendations now apply to the Revised Project, these mitigations measures and recommendations are also identified as part of this assessment. [1]

Substantially Different Environmental Conclusions

Biological Resources

Consistency with Petaluma River Plan Corridor

> The Revised Project **substantially reduces** conflicts with local policies and ordinances as included the City's Petaluma River Plan Corridor for protecting biological resources, as compared to the original Project. (**Less than Significant with Mitigation**)

The Revised Project has a modified site plan that no longer includes any residential structures that intrude into the River Plan's designated River Corridor. The Revised Project's proposed development plan for new apartments no longer encroaches into the Petaluma River Access and Enhancement Plan (River Plan) Buffer Zone (as delineated by individual tree canopies and wetlands, the river centerline, and the new river terrace), and allows for greater retention of oak trees within the oak woodland habitat along the upper riverbank (see prior Figure 2-5). Other than a minor encroachment of the residential sidewalk and a proposed bio-retention basin, the only components of the Revised Project that are located within the River Corridor are the riverside trail, terracing and restoration activities.

[1] Generally, only the primary text of applicable Draft EIR mitigation measures is included in the following assessment, unless the details of applicable mitigation measures have been revised substantively. The details of each mitigation measure can be found in the Summary Table of Impacts and Mitigation Measures (Chapter 1) of this document)

Mitigation Measures

Since the Revised Project does not include any residential structures in the River Corridor, but the concept plan does show a minor encroachment of segments of residential sidewalk and a proposed bio-retention basin, Mitigation Measures Bio-10A (which is intended to preclude residential development and associated improvements from intruding into the Petaluma River Plan Corridor) and Bio-10B are retained and modified, as follows:

> **Mitigation Bio-10A, Limitations on Improvements within the Petaluma River Plan Corridor:** No residential structures or directly related residential components 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 2-5). The only improvements allowed within the River Plan Corridor include the river trail, terracing and restoration. During the SPAR process, the Planning Commission could allow minor encroachments associated with residential improvements, such as a detention basin and/or segments of sidewalk within the outer buffer management zone, if found to be consistent with the intent of the River Plan and not impactful to the River Plan Corridor.
>
> **Mitigation Measure Bio-10B, RODZ review at SPAR**: The Site Plan and Architectural Review process shall include evaluation and review of the Revised 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.

The Revised Project does not contain buildings that encroach into the River Plan Corridor Boundary and minimizes conflicts with local policies and ordinances of the River Plan for protecting biological resources. This conclusion is substantially different from the conclusion reached in the Draft EIR for the original Project, as the original Project did include residential buildings located within the River Plan Corridor and its oak woodland habitat.

Tree Removal and Tree Protection

> The Revised Project would **substantially reduce** potential conflicts with local policies and ordinances protecting biological resources, including the City's tree preservation policies and ordinance. (**Less than Significant with Mitigation**)

The Revised Project has fewer units as compared to the original Project and has a modified site plan that eliminates the Shasta Avenue Extension and at-grade rail crossing. With the reduction in units and changed roadway pattern and other modifications, the Revised Project is able to reduce, by a substantial amount, the number of trees proposed for removal as compared to the original Project.

- The Revised Project's terraced grading plan has been modified to provide for protection of two additional large oak trees along the riverbank (trees #67 and 80). Additionally, the Revised Project no longer intrudes into the River Plan's designated River Corridor. Since the boundary of the River Corridor as defined for the site includes a 50-foot setback from the drip line of healthy and significant riparian oak trees, respecting the River Corridor enables preservation of four additional oaks (trees #69, 75, 77 and 79) and one smaller California bay tree (#74) along the top of bank and within the site's designated oak woodland habitat. The Revised Project does not propose removal of any protected tree within the River Corridor area.
- The Revised Project's modified site plan has been designed to preserve a greater number of isolated oak trees located within the site's River-Oriented Development Zone (RODZ). Although preservation of all existing oak trees in the site's RODZ is unlikely without conflicts with land development

considerations, the conceptual design of the Revised Project preserves substantially more trees in the RODZ than did the original Project, including preservation of five additional isolated oaks (trees #36, 37, 62, 101 and 202) and one additional redwood (#85).

- The Revised Project's site plan has also been designed to preserve a greater number of protected trees within the parcel at APN-006 (not in the River Plan jurisdiction). Trees now proposed for preservation include those protected trees along the edge of the adjacent Bernice Court neighborhood (trees #1, 2, 13, 17, and 100), protected oaks (oaks #41 and 103) along the Graylawn frontage, and most of the redwoods along the Graylawn frontage (including protected redwoods #42, 43, 46-50, 52 and 53.

A summary of changes in proposed tree removal that compares the original Project to the Revised Project is shown in **Table 3-1** and **Figure 3-1**.

Table 3-1: Status of Protected Trees
(original Project / Revised Project)

Protected Species on and near Site	Total Protected Trees	Protected Trees Preserved	Protected Trees Removed			
			Removed in River Plan Corridor	Removed in RODZ	Removed in APN - 006	Total Removed
Oaks	51	24 / 42	6 / 0	8 / 3	13 / 6	27 / 9
Redwoods	13	2 / 12	-	1 / 0	10 / 1	11 / 1
Box Elders at River [1]	4	4 / 4	0 / 0	-	-	0 /0
Total	68	30 / 58	6 / 0	9 / 3	23 / 7	38 / 10

Source of original Project data: Becky Duckles, Oak Creek II Tree Inventory and Evaluation, revised September 2004; Sid Commons, Petaluma, CA. Arborist Report – Response to City & Tree Removal and Mitigation Calculations, Aug 2016

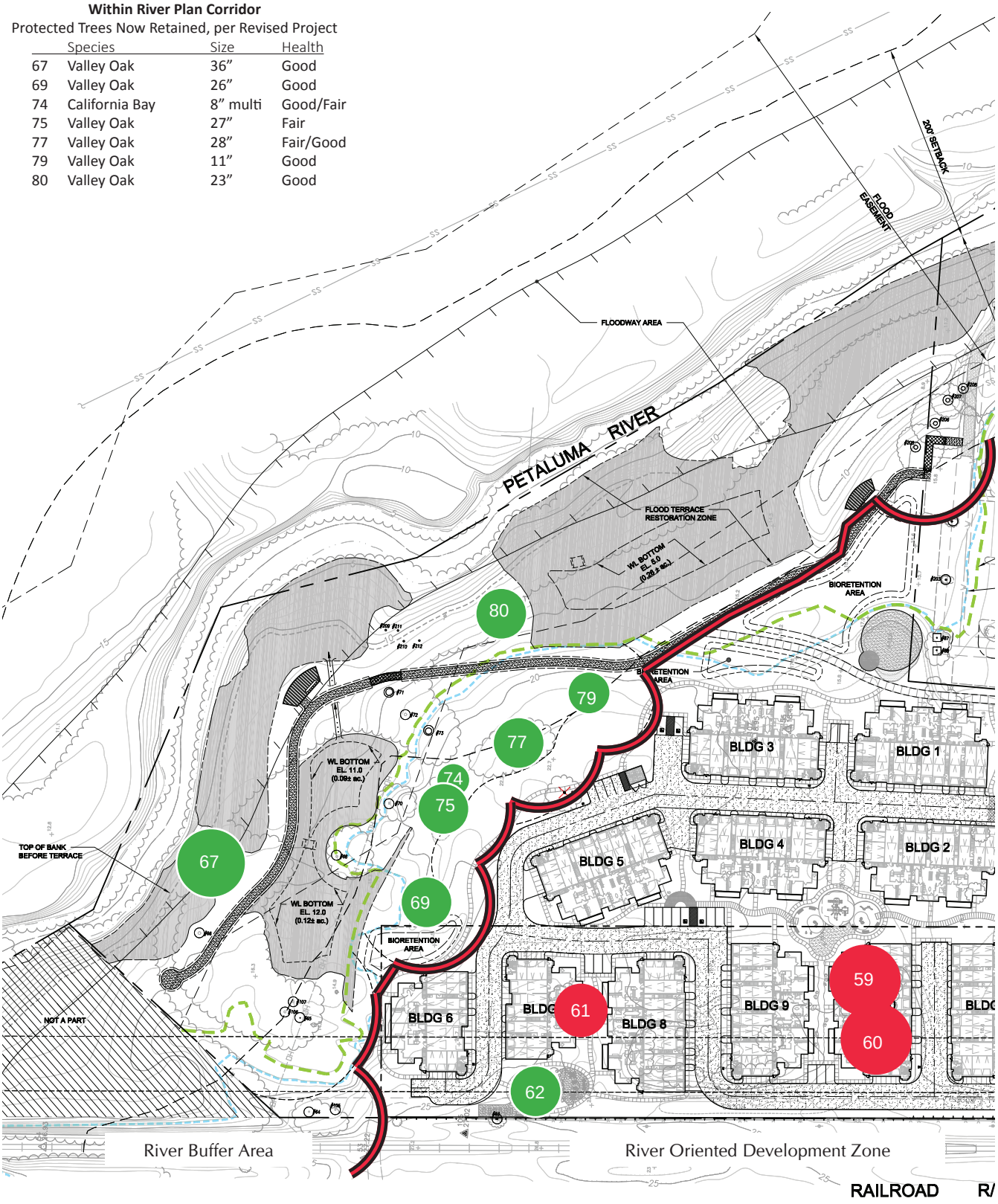
Note 1: Pursuant to the City of Petaluma Tree Preservation Ordinance, Box Elder is protected as native trees when located in a riparian corridor, and is listed here because they are within the boundaries of the River Plan Corridor and healthy

The modified site plan of the Revised Project substantially implements Mitigation Measure Bio-11A of the Draft EIR by preserving additional existing trees on the site. The modified site plan demonstrates a substantial increase in tree preservation of 28 more trees, although 10 protected trees are still proposed for removal to allow for development of the Revised Project. The Revised Site Plan is a preliminary concept plan and is subject to detailed design refinement pursuant to the Site Plan and Architectural Review (SPAR) process. During SPAR review, the following specific tree preservation requirements shall be monitored for compliance, and the SPAR process may consider additional site design modifications to further increase tree preservation.

Within River Plan Corridor

Protected Trees Now Retained, per Revised Project

	Species	Size	Health
67	Valley Oak	36"	Good
69	Valley Oak	26"	Good
74	California Bay	8" multi	Good/Fair
75	Valley Oak	27"	Fair
77	Valley Oak	28"	Fair/Good
79	Valley Oak	11"	Good
80	Valley Oak	23"	Good



Protected Tree to be Preserved, originally proposed for Removal

Protected Tree proposed for Removal, also originally proposed for Removal

Figure 3-1
Tree Removal, Comparison of Revised Project to original Project

Within River Oriented Development Zone
Protected Trees Now Retained, per Revised Project

	Species	Size	Health
36	Valley Oak	37”	Good
37	Valley Oak	24”	Fair
62	Valley Oak	18/20/24”	Good
85	Coast Redwood	19”	Good
101	Coast Live Oak	5/9”	Excellent
202	Valley Oak	5”	Excellent

Within River Oriented Development Zone
Protected Trees Removed, per Revised Project

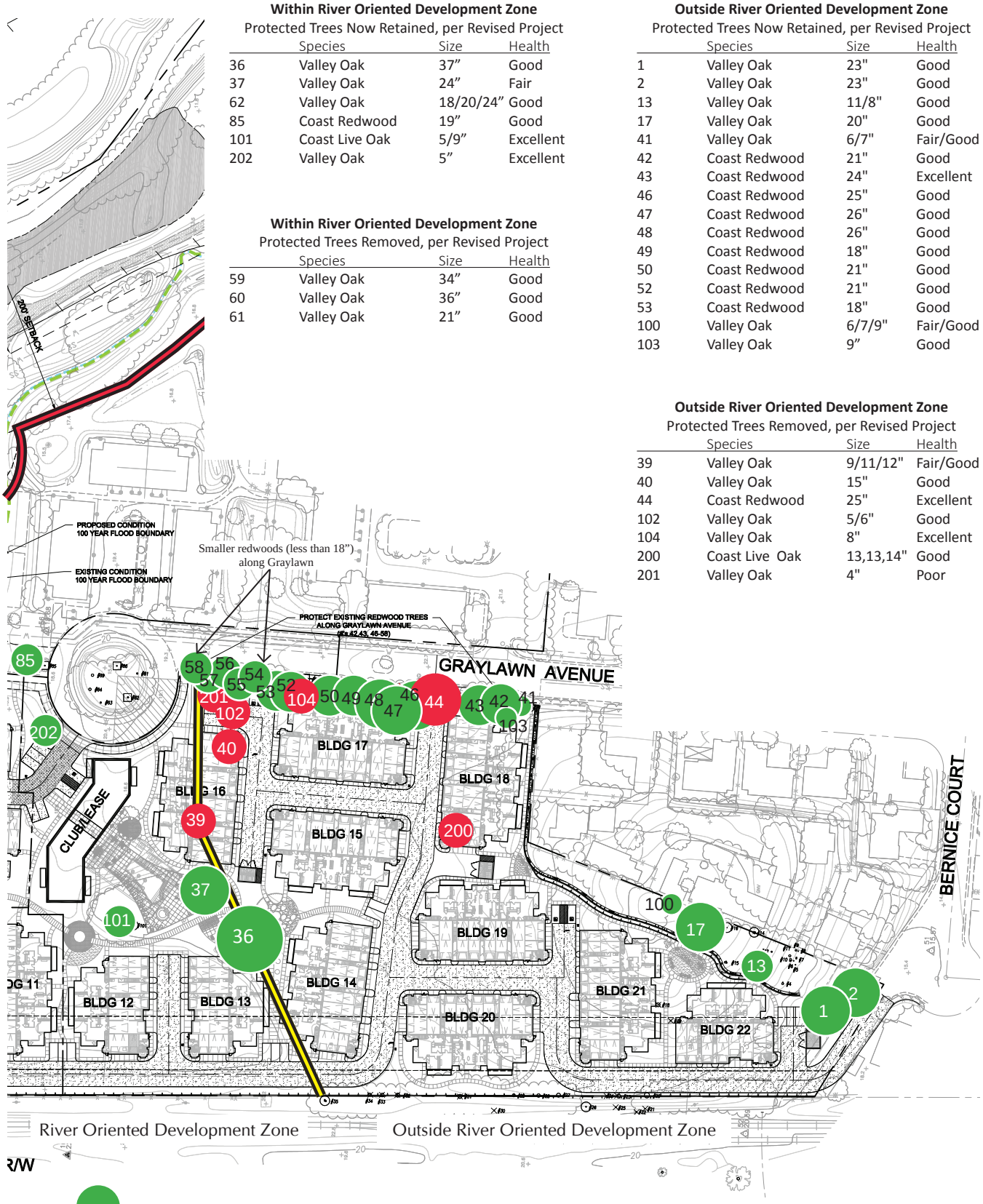
	Species	Size	Health
59	Valley Oak	34”	Good
60	Valley Oak	36”	Good
61	Valley Oak	21”	Good

Outside River Oriented Development Zone
Protected Trees Now Retained, per Revised Project

	Species	Size	Health
1	Valley Oak	23"	Good
2	Valley Oak	23"	Good
13	Valley Oak	11/8"	Good
17	Valley Oak	20"	Good
41	Valley Oak	6/7"	Fair/Good
42	Coast Redwood	21"	Good
43	Coast Redwood	24"	Excellent
46	Coast Redwood	25"	Good
47	Coast Redwood	26"	Good
48	Coast Redwood	26"	Good
49	Coast Redwood	18"	Good
50	Coast Redwood	21"	Good
52	Coast Redwood	21"	Good
53	Coast Redwood	18"	Good
100	Valley Oak	6/7/9"	Fair/Good
103	Valley Oak	9”	Good

Outside River Oriented Development Zone
Protected Trees Removed, per Revised Project

	Species	Size	Health
39	Valley Oak	9/11/12"	Fair/Good
40	Valley Oak	15"	Good
44	Coast Redwood	25"	Excellent
102	Valley Oak	5/6"	Good
104	Valley Oak	8"	Excellent
200	Coast Live Oak	13,13,14"	Good
201	Valley Oak	4"	Poor



Protected Tree (plus smaller redwoods along Graylawn) to be Preserved, originally proposed for Removal

Protected Tree proposed for Removal, also originally proposed for Removal

Source: CSW/Stuber Stroeh Engineering Group, 04-09-19

Mitigation Measures

To ensure that those additional trees now identified as being protected are ultimately protected during grading and construction, Mitigation Measure Bio-11A (as modified) and Bio-11C remain applicable to the Revised Project. Additionally, although substantially fewer protected trees are now proposed for removal, Mitigation Measure Bio-11B also remains applicable to the Revised Project, providing for replacement of protected trees to be removed.

Mitigation Measure Bio-11A, Ensuring Preservation of Existing Trees: The final designs of the residential portion of the Project should be designed to reflect the goal of preserving protected trees to the greatest extent possible, particularly those protected trees located within the Petaluma River Plan Corridor and those isolated oaks in the RODZ. 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 final design of the Project, to be reviewed at SPAR, 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) As the Revised Project depicts, the residential structures and their associated improvements shall 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. Within the Petaluma River Plan Corridor, the small California bay (#74) shall also be preserved as a native tree within the Corridor. The eucalyptus (#76) shall be removed as an exotic species undesirable near a riparian setting.

c) As the Revised Project concept plan depicts, not more than three mature oak trees shall be removed from the RODZ (i.e., within APN-009) to accommodate the Project. The Revised Project's concept plan shows these as oaks #59, 60 and 61. Younger oaks #101 and 202 shall also be preserved. Should the updated arborist review (per Mitigation Measure Bio-11E) find that any of the large oaks proposed to be preserved by the concept plan is not healthy and a good candidates for preservation, the site plan designed for SPAR shall instead preserve another of the large oaks on APN-009.

d) The SPAR process shall further consider site design modifications to preserve protected trees to the greatest extent possible at APN-006 (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. Tree protection on APN-006 shall be equal to that depicted by the Revised Project's concept plan. Thinning of the redwoods along Graylawn may be authorized by SPAR if recommended by the arborist. The EVA shall be designed to accommodate oaks 1 and 2, but should the Fire Marshal and the arborist find this impossible, SPAR is authorized to allow their removal pursuant to Mitigation Measure Bio 11-B.

e) During preparation of the site plan for SPAR, the applicant shall work collaboratively with the arborist and the civil engineer to design a site plan that addresses Bio 11B through 11D. The arborist shall provide further tree preservation analysis as part of the SPAR submittal, and shall ensure that all trees over 4 inches at breast height are included in the analysis.

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.

Mitigation Measure Bio-11C, Tree Protection Plan: All trees designated for preservation must have a good chance of long-term survival. Consistent with the River Plan, a tree protection plan for the site shall be prepared by a licensed landscape architect, arborist or certified forester, and approved by

the City for all trees to be preserved within the site to protect them during on-site grading and construction.

Of the 68 protected trees on the site, the Revised Project results in protection of 58 trees, representing 28 more trees being protected than was proposed for protection under the original Project. The Revised Project does result in removal of 10 protected trees from within the site, but substantially fewer than the 38 trees proposed for removal under the original Project. The conclusions of this analysis are different than presented in the Draft EIR, now concluding that the Revised Project would substantially reduce conflicts with the City's tree preservation policies and ordinance.

Land Use

Conflict with a Conservation Plan

The Revised Project **substantially reduces** conflicts with the Petaluma River Plan as compared to the original Project, but does not fully resolve all conflicts. Development of the site pursuant to the Revised Project would result in the filling of wetlands within the River Oriented Development Zone (RODZ) and would result in the removal of mature oak trees at the site. These actions would not be fully consistent with objectives, policies and programs identified in the Petaluma River Plan. (**Less than Significant with Mitigation**)

The River Plan identifies a portion of the site near the Petaluma River as "Oak Grove/Riparian Woodland Preservation Zone", and identifies seasonal wetlands on APN -009. The Draft EIR determined that filling of these wetlands and removal of mature oaks in order to develop the original Project would conflict with River Plan policies. Removal of mature oaks in both the upland and riparian oak woodland areas of the site to enable development is inconsistent with Objective #3 of the River Plan to "protect and preserve the existing communities of mature riparian vegetation, and restore and enhance native riparian and upland habitats." Filling of wetlands would be inconsistent with Policy #20 of the River Plan to "protect, restore and enhance areas of fragile habitat isolated in the RODZ, such as oaks and seasonal wetlands, whenever feasible." Mitigation Measures were identified in the Draft EIR (primarily in Chapter 6: Biology), that would mitigate impacts to biological resources and would serve to minimize conflicts with objectives, policies and programs of the River Plan.

Upland Development Area

The Revised Project's modified site plan no longer includes any residential buildings that intrudes into the River Plan's designated River Corridor. The Revised Project's conceptual site plan no longer encroaches into the Preservation Zone for oak woodland habitat or into the Buffer Zone as delineated by individual tree canopies along the edges of the woodland habitat, and allows for retention of many more trees than was achieved under the original Project (see prior Figure 3-1). The only components of the Revised Project located within the River Corridor, other than sidewalks and the bio-retention basin associated with the residential development, are the riverside trail, terracing and restoration activities, which are permitted pursuant to the River Plan and/or the General Plan. This change in the site plan complies with, or largely implements Mitigation Measure Bio-10A of the Draft EIR.

The Revised Project's modified site plan better achieves the River Plan goal of preserving protected trees, particularly by preserving all protected oak trees and native trees located within the River Plan Corridor, and by protecting more of the isolated oaks within the RODZ. Preservation of all existing protected trees on the site may conflict with reasonable land development considerations, but the design of the Revised Project does preserve many more of the most desirable and significant healthy trees on site. This change in the site plan complies with and serves to implement Mitigation Measure Bio-11A of the Draft EIR.

Like the original Project, the Revised Project proposes to fill six small seasonal wetlands (comprising 0.33 acres in total) that are located within the RODZ, isolated from the river and above the 100-year flood elevation on the site's westerly side near the SMART rail line. The Revised Project also proposes to fill a small, 0.01-acre seasonal wetland near the River to accommodate the river terrace. Like the original Project, mitigation for the loss of approximately 0.34 acres of wetlands is proposed by creating new wetland areas within the terraced grading of the riverbank.

Terraced Grading Plan

The Revised Project's terraced grading plan is similar to the terraced grading plan of the original Project, with the exception of providing for the preservation of two additional oak trees (#67 and #80) along the riverbank. The Revised Project's terraced grading plan would still result in removal of approximately 1.62 acres of riparian habitat due to terraced grading, but would (like the original Project), preserve approximately 0.3 acres of higher value native willow thicket along the riverbank (see prior Figure 2-6). Following grading activities, the graded slopes will be replanted with riparian trees and shrubs providing for a total of approximately 2.8 acres of replanted riparian habitat.

Like the original Project, the Revised Project proposes creation of new perennial and seasonal wetland habitat as mitigation for impacts to wetlands, augmenting habitat value and increasing habitat complexity along the River. Terraced grading along the River edge is proposed to include creation of new seasonal wetlands with appropriate wetland hydrology and native wetland plant establishment, resulting in creation of approximately 0.47 acres of seasonal wetland habitat. In order to preserve additional oak trees in the terrace area, the Revised Project proposes 0.07-acres less created wetland than the original Project, but the proposed creation of approximately 0.47 acres of new wetlands will still replace and/or exceed the functions and values of the approximately 0.34 acres of filled seasonal wetland.

Mitigation Measures

The following mitigation measures from the Draft EIR (as modified based on the Revised Project's concept plan) remain applicable to the Revised Project to ensure that the final site plan remains consistent with the City's River Access and Enhancement Plan.

> **Mitigation Measure Bio-4, Compensation for Seasonal Wetlands Fill**: The Project applicant shall provide on-site compensatory mitigation for fill of seasonal wetlands sufficient to achieve a no-net-loss standard (subject to additional requirements of the permitting agencies), providing new, higher quality wetlands habitat value than the low value habitat lost as a result of Project's fill and terrace grading.
>
> **Mitigation Measure Bio-5A, Riparian Preservation Zone**: Final grading plans for the Project's proposed terraced grading concept along the Petaluma River shall include a Riparian Preservation Zone of a minimum of 0.30 acres in size, where the preservation of existing high quality riparian vegetation shall be achieved. All development, including trails, grading and flood control alterations shall be prohibited in this Riparian Preservation Zone, with only minimal intrusions in carefully selected locations that could be authorized by the City for interpretive purposes only.
>
> **Mitigation Measure Bio-5B, Riparian Tree Preservation**: Special measures shall be implemented to protect riparian and oak woodland trees within and abutting the riparian zone (and as that zone is expanded by the river terracing project), including trees 65, 106, 107, 66-68, 70-74, 80, 209-212, and 205-208, and the 0.30 acre willow thicket designated as a Riparian Preservation Zone.
>
> **Mitigation Measure Bio-5C, Habitat Mitigation and Monitoring Plan**: A final Habitat Mitigation and Monitoring Plan (HMMP) shall be submitted for review and approval by the regulatory agencies and

the City, designed and constructed such that it contributes significantly to the wildlife and fishery habitat values and water quality of the greenway.

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.

Mitigation Bio-9: Incorporation of Native Plants in Landscaping Plans: The Project applicant shall submit a Landscape Plan for review and approval by the City, incorporating the 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.

Mitigation Bio-10A, Limitations on Improvements within the Petaluma River Plan Corridor: No residential structures or directly related residential components 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 2-5). The only improvements allowed within the River Plan Corridor include the river trail, terracing and restoration. During the SPAR process, the Planning Commission could allow minor encroachments associated with residential improvements, such as a detention basin and/or segments of sidewalk within the outer buffer management zone, if found to be consistent with the intent of the River Plan and not impactful to the River Plan Corridor.

Mitigation Measure Bio-10B: RODZ review at SPAR: The Site Plan and Architectural Review process shall specifically include an evaluation and review of the Project for consistency with River Oriented Development Zone (RODZ) policies and design guidelines, such that the northern portion of the Project that is within the RODZ is designed pursuant to those RODZ Guidelines.

Mitigation Measure Bio-11A, Ensure Preservation of Existing Trees: The final designs of the residential portion of the Project should be designed to reflect the goal of preserving protected trees located within the Petaluma River Plan Corridor and those oaks isolated in the RODZ. 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 final design of the Project, to be reviewed at SPAR, shall seek to preserve the most desirable and significant healthy trees on site.

Mitigation Measure Bio-11B: Protected Tree Replacements: This mitigation measure requires the project applicant to provide replacement trees for all protected trees permitted by the City to be removed.

Mitigation Measure Bio-11C: Tree Protection Plan: This mitigation measure requires the project applicant to prepare a tree protection plan that provides all trees designated for preservation with a good chance of long-term survival, consistent with the recommendations of a licensed landscape architect, arborist or certified forester and approved by the City.

Implementation of these mitigation measures would reduce potential conflicts with biological resource protection policies of the Petaluma River Access and Enhancement Plan to a level of less than significant.

Hazardous Conditions - Increased Presence along Rail Tracks

The Revised Project would result in increased presence along the rail racks, but reduces this potential safety hazards with fencing along the site frontage along the tracks. (**Less than Significant**)

The site's entire westerly boundary is parallel and immediately adjacent to the SMART railroad right-of-way. The increased presence of residents and visitors in an area immediately adjacent to the rail tracks could result in a greater potential for rail-related accidents along this portion of the line. However, pursuant to Mitigation Measure Hazards 5, the Revised Project includes a mobility barrier fence along the edge of and parallel to the rail tracks to limit access onto the railroad right-of-way.

Mitigation Measures

The following mitigation measure from the Draft EIR (as modified) remains applicable to the Revised Project.

> **Mitigation Measure Haz-5, Fencing**: As demonstrated in the Revised Project's conceptual design, the Project shall include an open-design appropriate fence along the edge of and parallel to the rail tracks, with consideration provided to the protection of existing trees and to limit access onto the railroad right-of-way. The final fence design shall be subject to SPAR review and approval.

Noise

Land Use Compatibility

> The Revised Project would **substantially reduce** exposure of new residents to future noise levels in excess of established standards as compared to the original Project.

According to the California Supreme Court's decision in *California Building Industry Association v Bay Area Air Quality Management District* (S213478, December 17, 2015), CEQA generally does not require that public agencies analyze impacts that existing (or potential future) environmental conditions might have on a project's future users or residents. An agency must analyze how environmental conditions might adversely affect a project's residents or users only where the project itself might worsen existing environmental hazards. Accordingly, the effect that existing or potential future ambient noise levels may have on the Revised Project (or the original Project) is not a CEQA matter. Therefore, the following analysis of the exposure of new residents to existing or future ambient noise levels as attributed to train noise on the adjacent SMART rail is provided for informational purposes and pursuant to General Plan policy, but is not considered a significant CEQA impact of the Revised Project.

As established in the Petaluma General Plan 2025, the policy for defining exposure of persons to noise levels in excess of established standards is an exposure to noise levels of greater than 65 dBA CNEL (a "conditionally acceptable" noise level) for multi-family residential uses. As indicated in the Draft EIR, the Environmental Noise Assessment for the North Coast Railroad Authority's (NCRA's) Russian River Freight Rail Project, expected future use of the rail track adjacent to the site is expected to increase to as many as 6 freight trains per day and up to 24 Sonoma-Marin Area Rail Transit (SMART) commuter/ passenger trains per day. At this level of expected train use, future noise along the rail tracks adjacent to the site is anticipated to be 65 dB CNEL at 54 feet from the tracks. This level of train activity was used in the Draft EIR as a reasonably foreseeable future condition. The Revised Project's conceptual site plan demonstrates that all future residential structures will be set back by a distance of at least 54 feet from the nearest rail track, such that all new multi-family residential buildings will be outside of this anticipated future 65 dB CNEL contour, and achieve "conditionally acceptable" noise levels.

The Federal Transit Agency (FTA) and Federal Rail Authority (FRA) have established guidance for defining acceptable exposure of primary outdoor use areas as an exposure to noise levels of greater than 60 dBA CNEL (a normally acceptable noise level). Based on the NCRA EIR, expected future use of the rail track adjacent to the site is expected to increase future noise along the rail tracks adjacent to the site to 60 dB CNEL at 109 feet from the tracks. The Revised Project does not propose any primary active outdoor use areas (i.e., the swimming pool and courtyard or active play areas) in areas within 109 feet of the rail centerline where noise levels are expected to in be in excess of 60 dBA Ldn.

The Revised Project serves to implement Recommendations Noise 1A and Noise 1C (see Chapter 7: Revisions to the Draft EIR), to be verified at SPAR, as indicated below:

> **Recommendation Noise 1A – Ensure "Conditionally Acceptable" Noise Levels**: No residential structure should be located closer than the calculated 65 dB CNEL contour. Based on existing rail noise levels, the 65-dBA CNEL noise contour is estimated to occur at approximately 30 feet from the center of the near set of railroad tracks. Based on potential future conditions (assuming increased freight rail traffic), the calculated 65 dB Ldn contour is estimated to be at 54 feet from the center of the near set of railroad tracks. The final design of the Project, to be reviewed at SPAR, should maintain a 54-foot setback from the center of the near set of railroad tracks.
>
> **Recommendation Noise 1C – Ensure Normally Acceptable Outdoor Noise Exposure**: No primary outdoor use area (i.e., the swimming pool and courtyard or active play areas), should be located closer than the calculated 60 dB CNEL contour. Based on existing rail noise levels, the 60-dBA CNEL noise contour is estimated to occur at approximately 60 feet from the center of the near set of railroad tracks. Based on potential future conditions (assuming increased freight rail traffic), the calculated 60 dB Ldn contour is approximately 109 feet from the tracks. The final design of the Project, to be reviewed at SPAR, shall not locate any primary outdoor use areas (i.e., the swimming pool and courtyard or active play areas) closer than 109 feet from the center of the near set of railroad tracks. Alternatively, the Revised Project's final design should incorporate noise attenuation into the design of all primary outdoor use areas that may include a fence or wall measuring at least 6 feet high and subject to SPAR approval, or placing primary outdoor use areas on the opposite side of a residential structure from the rail line.

The California Noise Insulation Standards found in CCR Title 24 provide the regulatory standard for defining noise exposure of indoor spaces in residential units as an exposure level of 45 dBA Ldn.[2] The Revised Project's conceptual site plan indicates that the design and construction of residential units facing the rail tracks will comply with Recommendation Noise 1B from the Draft EIR. The Revised Project therefore commits to implementation of the following Draft EIR recommendation:

> **Recommendation 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 capable of achieving interior noise levels of 45 dBA or lower. The acoustical consultant shall identify and include on the plans 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.

Throughout the remainder of the site, future noise levels from freeway traffic noise and rail noise are expected to be between 60 and 65 dBA CNEL, and within "normal" to "conditionally acceptable" noise levels. Standard residential building construction methods are generally capable of achieving a 15 to 20 dB reduction from outdoor noise, thus able to achieve the 45 dB interior noise requirement and reducing anticipated noise conditions inside buildings. This conclusion is different than the conclusion reached in the Draft EIR for the original Project. The modified site plan of the Revised Project provides for adequate setbacks from the adjacent SMART rail tracks to achieve "conditionally acceptable" noise levels at all multi-family residential units, and normally acceptable noise levels for outdoor recreational use areas under anticipated future conditions.

[2] California Code of Regulations, Title 24

Train Vibration

The Revised Project could potentially expose new residents to reasonably foreseeable future vibration levels in excess of applicable criteria established by the FTA and FRA for residential land uses.

Similar to noise exposure (see above) the exposure of new residents to existing or future vibration levels attributed to train traffic is provided for informational purposes and pursuant to General Plan policy and regulatory guidance, but is not considered a significant CEQA impact.

The Draft EIR's assessment of the original Project's exposure to train-related vibration levels was based on a reasonably foreseeable projection of future train activity on the adjacent SMART rail line as derived from the NCRA Russian River Freight EIR, which forecast increased rail traffic for SMART trains and freight rail use. Based on this forecast of future train activity, the Draft EIR recommended a 100-foot setback from the centerline of the rail, or incorporating structural design measures into the design of residential buildings closer than 100 feet from the tracks. As presented in the NCRA EIR, the 100-foot setback or structural design threshold was intended to address the guidance of the Federal Transit Authority (FTA) and the Federal Rail Authority (FRA) applicable to residences subjected to infrequent (less than 30 freight rail pass-bys per day) vibration occurrences at (80 VdB), plus a "penalty" threshold (down to 72 VdB) due to the anticipated extended duration of individual freight train events potentially including up to 60 cars in length).

SMART Train Vibrations

Current vibration data was obtained in May 2019 to measure SMART train pass-bys. These vibration measurements concluded that SMART trains produce vibration levels ranging from 58 to 59 VdB at 54 feet from the center of the rail tracks, well below the conservative NCRA EIR "penalty" threshold of 72 VdB. These measured vibration levels are relatively low due to the slow speed of train pass-bys, modern track conditions and vibration isolation included in the design of SMART trains. The Revised Project provides for a 54-foot residential set back from the centerline of the rails, more than adequate to meet the FTA 75 VdB criteria for the occasional (between 30 and 70 events per day) number of SMART train events that now occur. No further measures are required to address SMART train vibrations.

Freight Train Vibrations

Freight trains currently operate along the rail line adjacent to the Project site on an infrequent basis, with one or two freight trains on Monday and Thursday and some weekend nights only. It is uncertain whether freight rail will achieve either the frequency or the number of freight cars per train as was forecast in the NCRA EIR. Based on the current infrequent and relatively short-duration freight rail traffic on this track, the FTA criteria for infrequent train events is 80 VdB. This criteria is not a measurement of potential damage to buildings, but rather defines vibration levels that are distinctly perceptible and where many people may find this vibration level to be annoying. As cited in the Draft EIR, the NCRA EIR identified a "reference" freight train vibration level of approximately 74 to 78 VdB at a distance of 50 feet from the center of the tracks. The Revised Project includes a 54-foot setback from the nearest rail track, such that all new multi-family residential buildings will be outside of the current 80 VdB vibration zone (the criteria for infrequent freight rail traffic), and exposure to current heavy rail vibration would not exceed this FTA/FRA criteria.

However, as concluded in the Draft EIR, it is reasonably foreseeable that future train activity may increase to levels similar to that assumed in the NCRA Russian River Freight EIR (i.e., up to 6 freight trains per day, 5 during daytime and 1 at night), and/or that individual freight trains may increase to longer lengths of up to 60 cars per train. The Revised Project's 54-foot setback would achieve the infrequent rail traffic criteria of 80 VdB that would still apply to this condition, plus an additional "penalty" threshold (down to the "occasional event" criteria of 75 VdB) to address the potential for longer duration and/or nighttime vibration events. The 75 VdB criteria would occur at approximately 50 to 60 feet from the rail centerline, depending on the

individual train. For example, the NCRA EIR's "reference" freight train was assumed to generate vibration levels of approximately 75 VdB (between 74 to 78 VdB) at a distance of 50 feet.

Additionally, as was applied in the NCRA Russian River Freight EIR, the City of Petaluma could apply an even more conservative criteria to the Revised Project, inclusive of a "frequent event penalty" to further address the potential for longer duration and/or nighttime rail vibration events in the future. The "frequent event" criteria of 72 VdB occurs at approximately 100 feet from the rail centerline.

Vibration reduction strategies such as those identified in Recommendation Noise-2 of the Draft EIR (as amended, see below) could be incorporated into the design and construction of any new buildings located within 100-feet of the rail centerline, to effectively reduce vibration levels to below this more conservative 72 VdB criteria.

> **Recommendation Noise 2 - Avoidance/Vibration Attenuation Measures**: The Project should incorporate the following vibration avoidance or reduction strategies as part of its final design and/or construction.
>
> a) The Revised Project's proposed 54-foot residential set back from the centerline of the nearest set of rails more than adequately meets the FTA 75 VdB criteria for the "occasional" SMART train events that now occur and that is expected to occur in the future (i.e., between 30 and 70 SMART trains per day), and should be retained.
>
> b) The Revised Project's proposed 54-foot residential set back from the centerline of the rails is also adequate to meet the FTA 80 VdB criteria for the "infrequent" heavy freight rail traffic that now occurs, and that is expected to occur in the future. This 54-foot setback also accommodates an additional "penalty" threshold (down to the "occasional event" criteria of 75 VdB) to address the potential for longer duration and/or nighttime vibration events, and should be retained.
>
> c) To address an even more conservative vibration criterion as was applied in the NCRA Russian River Freight EIR, the City of Petaluma could consider an additional "penalty" threshold to meet the "frequent event" criteria of 72 VdB, which occurs at approximately 100 feet from the rail centerline. To meet this more stringent criterion, structural design measures could be incorporated into the design and construction of residential buildings located closer than 100 feet from the tracks, as necessary to reduce groundborne vibration to below the 72 VdB criteria. Special building methods can be incorporated to reduce groundborne vibration from being transmitted into project structures.

Construction Noise Impacts

Similar to the original Project, construction of the Revised Project will result in temporary and periodically significant noise impacts, especially where grading and construction activities are to be conducted in close proximity to existing and new sensitive receptors, including the existing Oak Creek Apartments and neighbors along Bernice Court, Graylawn Avenue and Jesse Avenue. Although the Revised Project has fewer units than the original Project, its construction activities are assumed similar to those of the original Project, and are expected to occur over a similar period of approximately 20 months. During Project construction, temporary noise increases would result from the operation of heavy equipment. Construction noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and receptor, and presence or absence of barriers between noise sources and receptors. The increase in noise levels at nearby locations during construction would be temporary in nature and would not generate continuously high noise levels, although occasional single-event disturbances from construction are possible. The majority of construction activities would take place at a distance farther than 50 feet from existing residences. In the later phases of construction (i.e., during interior building construction) noise levels are typically reduced due to the newly erected physical structures that interrupt noise transmission. Thus, the

highest noise levels that would be experienced by adjacent sensitive receptors would only occur for a limited duration during construction activity. However, the temporary or period impact when grading or construction activities occur within 100 feet of an existing residence would be significant. To address construction-period noise impacts, the Draft EIR included the following mitigation measures, which are equally applicable to the Revised Project:

> **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. 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. Construction is prohibited on Sundays and on all holidays recognized by the City of Petaluma. 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 engine controls to minimize disturbance to adjacent residential uses during Project construction. 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 minimize noise levels at the closest residential receptors. If impact equipment such as jackhammers, 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. 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. 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. The construction contractor shall not stage equipment within 200 feet of the existing residential land uses to the west and south of the project site. 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 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. 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. Construction worker's radios shall be controlled 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 property lines adjacent to the existing Oak Creek Apartments and neighbors along Bernice Court and Graylawn Avenue, to shield these existing sensitive receptors from construction noise. To the extent feasible, the construction contractor shall prioritize construction of buildings nearest to Graylawn/Bernice Court during the earlier phases of

construction, such that new buildings can serve as a noise barrier to further dampen construction noise as the site develops (see Chapter 7: Revisions to the Draft EIR).

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.

With required conformance with the City of Petaluma Noise Ordinance and implementation of recommended mitigation measures, all reasonable and feasible noise attenuation strategies will be implemented. With implementation of all mitigation measures as identified, the exposure of sensitive receptors to excessive noise during construction will be reduced to a less than significant level. The highest noise levels that would be experienced by adjacent sensitive receptors would only occur for a limited duration during construction activity. Not all construction activity associated with the Revised Project would occur in immediate proximity to adjacent neighbors, and construction that does occur adjacent to existing neighbors is unlikely to individually last for more than 1 year. (**Less than Significant**)

Train Horn Noise

The Revised Project would expose new residents to existing noise from train horns at the existing Payran crossing, but **would not** expose existing and new residents to additional train horn noise from trains crossing at an at-grade Shasta crossing. Future noise levels **will not** represent a substantial increase in ambient noise levels in the vicinity in the absence of the Project.

The exposure of new residents to existing noise from train warning horns is provided for informational purposes and pursuant to General Plan policy, but is not considered a significant CEQA impact of the Revised Project. As demonstrated in the Draft EIR, portions of the site and much of the surrounding neighborhoods are exposed to the "severe noise impact zone" (in excess of 60 dB Ldn) from train warning horns at the existing Payran crossing. The entire Project site is subject to "Category 2" moderate train horn noise impacts from this existing condition. Noise from existing train warning horns at the Payran crossing will affect new residents of the Revised Project, but this noise is not an impact attributable to the Revised Project. The Quiet Zone designation established for this existing at-grade crossing, effective May 23, 2017, significantly reduces noise from this location.

Unlike the original Project, the Revised Project does not include an extension of Shasta Avenue or an at-grade rail crossing. No additional severe train horn noise that would otherwise have been associated with this new crossing will occur. Noise from a new warning horn as was analyzed in the Draft EIR was attributable to the original Project's proposed at-grade rail crossing, and this new noise source would not occur pursuant to the Revised Project. This conclusion is substantially different that the conclusion reached in the Draft EIR. Without the original Project's at-grade rail crossing, the Revised Project would not introduce a significant new source of severe noise and no mitigation measures are warranted.

Traffic Noise Impacts

Impact Noise-6: Traffic generated by the Revised Project would not result in a permanent increase in ambient noise levels of 4 dBA CNEL or more, such that traffic noise would exceed "normally acceptable" noise levels at nearby land uses. **(Less than Significant**)

All traffic generated by the Revised Project would have only one means of ingress and egress via Graylawn Avenue, with a portion of those trips also using the Graylawn-to Jess alternative route to Payran. The expected ADT on Graylawn would increase from approximately 1,142 existing ADT to approximately 2,510 ADT with trips introduced by the Revised Project. The expected ADT on Jess would increase from approximately 419 existing ADT to approximately 642 ADT under the Revised Project. With this level of additional traffic, residences along Graylawn Avenue would experience increased traffic noise. Analysis has been conducted to determine whether this additional traffic noise would be a significant impact based on the threshold used in this EIR, which defines "significant" as a permanent increase in ambient noise levels of 4-dBA CNEL or more, if the resulting noise level would exceed that described as normally acceptable for the affected land use.

Recent (May 2019) measurements of traffic noise have been conducted at a location approximately 105 feet from the centerline of Graylawn Avenue along Cordelia Drive to quantify existing ambient traffic noise in the neighborhood (see **Appendix B** of this document). Based on these recent measurements, the current ambient noise level at this location ranges from 59 to 61 dBA CNEL on weekdays, and from 56 to 58 dBA CNEL on weekends. Existing ambient noise at residences along Graylawn is already at, and in certain cases already exceeds the "normally acceptable" noise level of 60 dBA CNEL. The increased traffic on Graylawn attributable to the Revised Project has been calculated as corresponding to an increase in traffic noise levels of approximately 3.4 dBA CNEL, and the increased traffic attributable to the Revised Project on Jess Avenue would equate to a corresponding increase in noise levels of approximately 1.9 dBA CNEL. The Revised Project's traffic on Graylawn will contribute to existing ambient noise levels may exceed the "normally acceptable" noise level of 60 dBA CNEL, but neither Graylawn nor Jess would experience an increase in traffic noise that would exceed the threshold level of 4 dBA CNEL, and the impact would be less than significant. Furthermore, the applicant has voluntarily agreed to incorporate a Traffic Calming Plan into the Revised Project to address increased traffic on Graylawn and Jess Avenues (see Recommendation Transp-B, below). The Traffic Calming Plan is intended to, among other objectives, reduce vehicle speeds that will also reduce associated traffic noise.

Although the traffic characteristics for assessing increased traffic noise pursuant to the Revised Project are substantially different from the traffic characteristics assessed in the Draft EIR for the original Project, the conclusion regarding traffic noise is substantially the same. The increase in traffic on Graylawn and Jess Avenues would not result in a permanent increase in ambient noise levels of 4 dBA CNEL or more.

Transportation and Circulation

Project Trip Generation

The trip generation forecast for the Revised Project is based on average rates published in Trip Generation, 10th Edition (Institute of Transportation Engineers [ITE], 2017). The ITE trip generation rates contain data based on research conducted in the United States over the past few decades for various types of land uses. For purposes of both the original Project and the Revised Project, the trip generation rate for Land Use 220 "Apartments" was used (see additional discussion regarding trip generation rates in Master Responses to Comments on the Draft EIR). The expected trip generation for the Revised Project is as indicated in **Table 3-2**.

Table 3-2: Revised Project Trip Generation Estimates

		Daily		AM Peak Hour				PM Peak Hour			
					Trips				Trips		
Land Use	Size	Trip Rate [1]	Trips	Trip Rate [1]	In	Out	Total	Trip Rate [1]	In	Out	Total
Multi-family Residential (apartments)	205 DU	7.32	1,591	0.46	22	73	95	0.56	71	42	113

Notes:

1. Trip rates based on data for fitted curve equations published in ITE Trip Generation, 10th Edition (2017)

DU – dwelling units

The Revised Project is expected to generate 1,591 daily trips, with 95 of those trips occurring during the AM peak hour and 113 occurring during the PM peak hour. The Revised Project would generate approximately 217 fewer daily trips, 45 fewer AM peak hour trips and 58 fewer PM peak hour trips than would the original Project.

Trip Distribution and Assignment

Trip distribution describes the general geographic locations of origins and destinations of project-related vehicle trips. Trips associated with the Revised Project are assigned to roadways and intersections based on an evaluation of existing traffic patterns as indicated from surveys conducted at the adjacent Oak Creek Apartments (see Master Response to Comments on Trip Distribution), and complimentary land uses. Based on these trip distribution assumptions, traffic generated by the Revised Project was assigned to specific routes and intersections through the roadway network. From the Revised Project site, all trips will travel via Graylawn Avenue to Payran Street, with approximately 86% using Graylawn only, and 14% using the Graylawn/Jess Avenue alternative route to Payran Street. From there, Project trips will be distributed throughout the City's street system and to the freeway (see **Figure 3-2**).

This trip distribution assignment is substantially different than was assumed for the original Project, which had assumed that approximately two-thirds of the original Project trips would use the then-proposed Shasta Extension to Petaluma Boulevard North, and only one-third would use Graylawn Avenue. The Draft EIR also included an additional analysis of the original Project using only Graylawn Avenue (without the Shasta Avenue Extension).

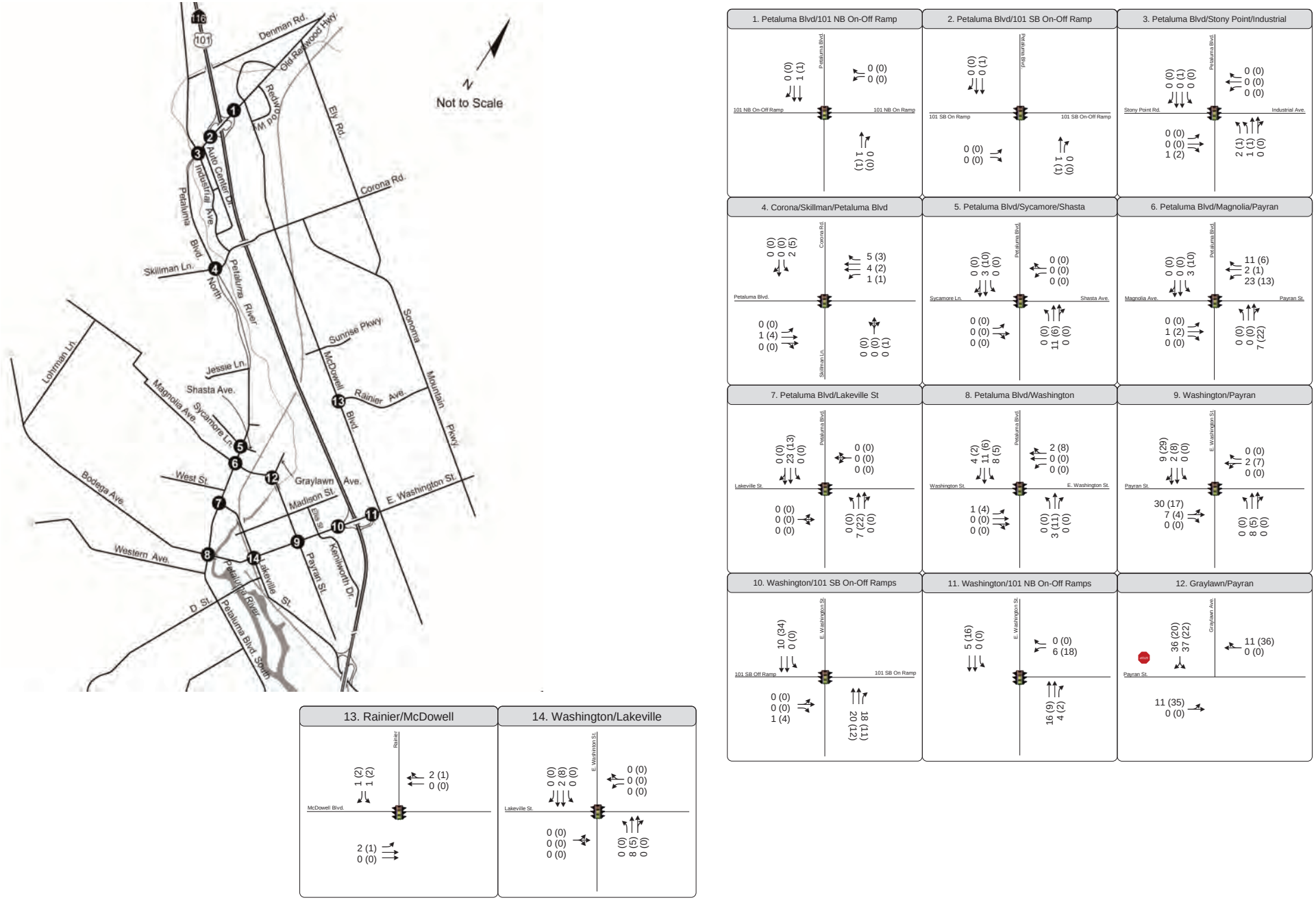


Figure 3-2
Revised Project Trip Assignments to Intersections

Source: Fehr & Peers, May 2019

Existing plus Revised Project - Intersection Level of Service

> Traffic generated by the Revised Project, when added 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 intersection. (**Less than Significant**)

The analysis presented in the Draft EIR concluded that, with the greater traffic generated by the original Project, all study area intersections would still operate at acceptable levels of service. No study area intersections that currently operate at LOS E or F, and no signalized intersections currently operating at acceptable LOS D or better under existing conditions, would have deteriorated to an unacceptable level LOS E or F when traffic generated by the original Project was added. Similarly, no unsignalized intersections currently operating at acceptable LOS D or better under existing conditions would have deteriorated to an unacceptable level LOS E or F when traffic generated by the original Project. Traffic volumes at unsignalized intersections would not have satisfied Caltrans peak-hour volume warrant criteria for traffic signal installation.

The Revised Project would generate approximately 45 fewer AM peak hour trips and 58 fewer PM peak hour trips than would the original Project. With less trips generated, the Revised Project would contribute less overall traffic to the roadway network, would have less substantial impacts at intersections throughout the City's roadway network, and would not result in any new or more severe impacts related to intersection level of service than was presented in the Draft EIR for the original Project.

Payran Street/Graylawn Avenue

The Draft EIR (page 14-70) also presented an analysis of a separate scenario assuming that all of the original Project's trips, including 143 trips during the AM peak period and 146 trips during the PM peak period, would be added to the intersection of Graylawn Avenue/Payran Street. The analysis concluded that this intersection would change from LOS B during both peak hours to still-acceptable LOS C during both peak hours if all traffic generated by the original Project were added at this intersection.

Based on more recent (2019) traffic counts conducted in the area (see Master Response to Comments on the Accuracy and Applicability of Traffic Counts), existing traffic at the Payran Street/Graylawn Avenue intersection has increased by approximately 53 percent as compared to traffic volumes presented in the Draft EIR. However, this increase in relative traffic volume has not significantly affected intersection operations, which remain at LOS B. Although existing traffic has increased, the Revised Project would contribute 65 fewer AM trips and 44 fewer PM trips than would have been contributed by the original Project under the scenario whereby all trips generated by the original Project would use Graylawn, only. Total trips at this intersection, including 2019 traffic and the Revised Project, would be 78 AM peak hour trips and 102 PM peak hour trips. With less total trips at this intersection than was assumed under the Graylawn only scenario as presented in the Draft EIR, the Revised Project would not increase traffic to an extent that would exceed an acceptable LOS C during either the AM or the PM peak hours at the Graylawn/Payran intersection.

Cumulative Plus Project - Intersection Level of Service

> The addition of Project-generated traffic to the Cumulative scenario (without the Project) **would not** cause a cumulative level of service (LOS) standard established by the City of Petaluma to be exceeded at any study area intersections. (**Less than Significant**)

The Draft EIR identified two intersections that would operate at unacceptable LOS E or F conditions under the Cumulative without Project scenario: North McDowell Boulevard/Rainier Avenue (Intersection #13) and Petaluma Boulevard North/Shasta Avenue (Intersection #5). The Draft EIR concluded that traffic generated by the original Project would not cause a significant impact to North McDowell Boulevard/Rainier Avenue. The

Revised Project generates less traffic than the original Project, and therefore the conclusion of the Draft EIR for this intersection would not change.

A substantial increase in cumulative traffic is also expected at the existing intersection of Petaluma Boulevard North/Shasta Avenue due to the planned construction of the Shasta Collector Street to Rainier as set forth in the General Plan (this is not the same as the Shasta Avenue Extension as was proposed pursuant to the original Project). The Shasta Collector Street to Rainier would facilitate cumulative travel between McDowell Boulevard and Petaluma Boulevard North, increasing the number of vehicles and the congestion at this existing intersection to unacceptable LOS F conditions. The planned Shasta Collector Street extension is not a Project-related improvement, but rather is anticipated in the General Plan as part of the Rainier Cross-Town Connector. The Rainier Cross-Town Connector Draft EIR (URS Corporation, July 2014) recommended 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, and a median refuge (at least five feet wide) installed for pedestrians crossing Shasta Avenue at the Petaluma Boulevard intersection. That EIR found that these improvements would improve intersection operations to LOS C in the PM peak hour under Cumulative plus Project conditions. These improvements are required as mitigation measures for the Rainier Cross-Town Connector Project, and are not attributed to the Sid Commons project.

Whereas the original Project would have substantially increased cumulative traffic at this intersection with its proposed Shasta Avenue Extension and at-grade crossing, the Draft EIR Mitigation Measure Transp-3 indicated that, "if the at-grade crossing is approved, then the applicant shall make a fair share contribution towards the intersection improvement at Petaluma Boulevard/Shasta Avenue, in addition to applicable Traffic Impact Fees". The Revised Project no longer proposes the Shasta Avenue Extension and will not directly contribute substantial additional traffic to the westbound approach to this intersection. The Revised Project will be subject to the City's Traffic Impact Fees, which are collected to fund ongoing maintenance and planned improvements citywide, including the Rainier Crosstown Connector. Additional fair-share contributions to this General Plan improvement are not warranted under the Revised Project and Mitigation Measure Transp-1 is no longer applicable (see Chapter 7: Revisions to the Draft EIR).

Emergency Vehicle Access and Design Hazards

> The Revised Project would **not** substantially increase roadway hazards and hazards for emergency vehicles accessing the Project site, as it would **not** include an at-grade rail crossing. (**Less than Significant**)

The Revised Project's proposed vehicle access includes two driveway entries into the apartment complex via Graylawn Avenue, and does not include the original Project's proposed Shasta Extension from west of the SMART rail tracks and over an at-grade crossing. The at-grade rail crossing was a design hazard of the original Project and is now removed pursuant to the Revised Project.

Like the original Project, the Revised Project also includes a proposed secondary means of emergency vehicle access (EVA) to the site at the existing approximately 32-foot wide frontage at the end of Bernice Court. As noted in the Draft EIR (page 14-67), "If no Shasta Avenue Extension across the rail tracks were provided, the Project would provide only one primary point of vehicle access (via Graylawn Avenue) with an emergency EVA access at Bernice Court. The Bernice Court frontage would be designed to 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, and the impact would be less than significant." In 2019, the City Engineer and Fire Marshal reviewed this prior conclusion from the Draft EIR and accepted this

same determination for the Revised Project.[3] In addition, the City Fire Marshal provided the following recommendation to be added to this EIR:

> **Recommendation Transp-7/Haz-7, EVA Design**: To ensure that the Bernice Court EVA is continuously available for emergency use, the EVA connection at Bernice Court shall include design measures including, but not limited to bollards, red curb or red pavement striping, no-parking signage, etc., intended to prohibit parking and other obstructions at this EVA access. Final EVA design measures shall be subject to review and approval by the Fire Marshal.

The site is approximately 1.5 miles from the nearest fire station located on D Street at 2nd Street in downtown Petaluma, and emergency vehicles would be able to approach the Project site using multiple routes (Graylawn, Jess and the Bernice Court EVA).

Mitigation Measures

Emergency vehicle access to the site, including the Bernice Court EVA (with the design recommendations of the Fire Marshal), would be sufficient to meet Subdivision Map Act requirements and requirements of the Petaluma Fire Code requiring at least two points of access, and no significant access or design hazards would occur. This conclusion is substantially different that the conclusion reached in the Draft EIR for the original Project and its then-proposed at-grade rail crossing. The Revised Project eliminates the direct and immediate safety hazard that would have otherwise been introduced by the Shasta Extension and at-grade vehicle crossing of the SMART rail tracks. The Revised Project is consistent with CPUC recommendations against the creation of new at-grade rail crossings. Without the original Project's at-grade rail crossing, the Revised Project would not introduce a significant safety hazard to traveling motorists, emergency responders or the rail carriers, and no further mitigation measures (i.e., a grade-separated vehicle bridge or at-grade rail crossing safety improvements at Shasta) are warranted. Since the Revised Project no longer proposes the Shasta crossing, Mitigation Measure Transp-7A: Grade Separated Bridge and/or Mitigation Measure Transp-7B: At-Grade Rail Crossing Safety Measures, are no longer applicable or necessary to address increased roadway hazards.

Local Roadway Capacity

> The Revised Project would **not** substantially increase traffic on an existing sub-standard street section.

All traffic generated by the Revised Project would have only one means of ingress and egress via Graylawn Avenue, with a portion of those trips also using the Graylawn-to-Jess alternative route to and from Payran. With the Revised Project's trips added to existing traffic, the expected combined average daily trips (ADT) on Graylawn would be approximately 2,510 vehicle trips per day, and the expected combined ADT on Jess would be approximately 642 vehicle trips per day (see additional discussion regarding Graylawn and Jess Avenue traffic in Master Responses to Comments on the Draft EIR). With this addition of traffic, residents living along Graylawn Avenue would notice a significant increase of more than twice the ADT that currently uses this street. Turning movements to and from Jess Avenue, Bernice Court, Cordelia Drive, Betty Court and the many driveways along Graylawn Avenue would experience additional delay. The Revised Project's traffic on Jess Avenue would have a less noticeable increase in ADT (approximately 50 percent more ADT than currently uses this street), and turning movements at Jess/Graylawn and the many driveways along Jess Avenue would experience some additional delay.

However, Jess Avenue and Graylawn Avenue are not sub-standard streets. Both streets have rights-of-way widths of at least 36 feet, both streets have one 10- to 12-foot wide travel lane in each direction, and both

[3] Personal communication, Tiffany Robbe July 2019

streets have sidewalks on both sides. The projected increase in traffic on both Graylawn and Jess Avenues is not so high as to affect operations through these roadway corridors or at their adjoining side street intersections to a significant level (i.e., to a level that would necessitate changes in traffic controls based on CEQA LOS criteria). The stop sign-controlled intersection at Graylawn/Payran (which only stops Graylawn traffic) currently operates at LOS B during both peak hours, and would operate at acceptable LOS C or better during both peak hours with traffic generated by the Revised Project. The 4-way stop sign-controlled intersection at Jess/Payran has substantially lower side-street traffic volumes than Graylawn/Payran (but with similar volumes on Payran), and therefore would operate with less delay than Graylawn/Payran under conditions with and without the Revised Project. The addition of traffic from the Revised Project would not cause significant changes in vehicle operations for drivers along Graylawn Avenue, Jess Avenue or other adjoining side streets. The Revised Project would not result in a significant CEQA impact pertaining to local roadway capacity.

Street Design and Construction Standards

Pursuant to the City of Petaluma Department of Engineering's Street Design and Construction Standards & Specifications, local residential streets are intended to carry up to a maximum ADT of 2,000 trips, serving up to 200 dwellings.[4] According to the City General Plan 2025 Mobility Report's Street Classifications diagram, both Graylawn and Jess Street are indicated as Residential Streets (i.e., are not classified as either Arterials, Collectors or Connector Streets), and Payran is designated as an Arterial.[5]

With the Revised Project's trips, traffic volumes on Graylawn would increase to 2,510 ADT, and traffic volumes on Jess Avenue would increase to 642 ADT. The Revised Project would cause the traffic volume standard for a local residential street as set forth in the Street Design and Construction Standards & Specifications to be exceeded on Graylawn Avenue, but not on Jess Avenue (see **Table 3-3**). These City Street Standards are not identified as CEQA thresholds for this EIR (nor have these standards been used as CEQA thresholds in other prior City of Petaluma EIRs), but they do provide a relative means of measuring the qualitative "livability" of local streets as related to increased traffic.

Table 3-3: Traffic Volumes versus Design Standards on Graylawn and Jess Avenue (ADT)

Scenario:	Graylawn Avenue	Jess Avenue
Existing ADT	1,142	419
Revised Project Contribution of ADT	1,368	223
Existing plus Revised Project ADT	2,510	642
Exceed Design Standard of 2,000 ADT? [1]	Yes	No

Notes: 1: Design Standard of 2,000 ADT is not used as a CEQA threshold in this EIR

Mitigation Measures

None required. Both Graylawn Avenue and Jess Avenue are standard street sections with adequate corridor capacity, and traffic generated by the Revised Project would not exceed a CEQA intersection LOS threshold.

[4] City of Petaluma Department of Engineering, Street Design and Construction Standards & Specifications, Street Standards Design and Application Guidelines (page 3), May 1999

[5] Petaluma General Plan 2025, Street Classifications, accessed at http://cityofpetaluma.net/cdd/plan-general-plan.html

Although not required as CEQA mitigation, the following traffic engineering recommendations are provided as information relevant to options for addressing conflicts with the City's 2,000 ADT design standard for Graylawn Avenue as a residential road:

> **Recommendation Transp-A, Reduce Revised Project Size to Fit Graylawn Capacity:** If the Revised Project were to be reduced in size to approximately 108 residential units, it would produce approximately 858 daily trips, 52 AM peak hour trips, and 64 PM peak hour trips. This number of additional trips could be accommodated, in addition to the existing 1,142 daily trips currently on this roadway, such that the ADT would not exceed the City of Petaluma Department of Engineering's Street Standard Design.
>
> **Recommendation Transp-B, Introduce Traffic Calming and Enhance Livability along Graylawn Avenue:** The Revised Project shall implement a Traffic Calming Plan, which may include bulb outs, street tree planting, pavement marking and other roadway livability improvements and traffic calming features to minimize conflicts with "livability" standards for local streets that exceed the 2,000 ADT design standard for this roadway. Prior to SPAR review at the Planning Commission, the applicant shall coordinate with City Public Works staff on the preferred Traffic Calming approach and design (anticipated to be similar in nature to Concept 3 as shown in the draft Traffic Calming Plan of Appendix A). The preferred Traffic Calming Plan shall be shown on the plan set for SPAR review. The Public Improvement Plan set for the Revised Project shall include the finalized Traffic Calming Plan.

This conclusion is different than was reached in the Draft EIR for several reasons. The Draft EIR assumed the original Project would add new cars to the sub-standard section of Shasta Avenue on the opposite side of the SMART tracks. Since the Revised Project does not include the Shasta Extension, no trips from the Revised Project would contribute to the sub-standard street segment on the west side of the rail tracks, the impact would not occur and mitigation for improvements to Shasta Avenue as presented in the Draft EIR (Mitigation Measure Transp-8) is not warranted.

The Draft EIR provided information regarding the number of additional trips expected to use Graylawn Avenue, assuming the Shasta Extension and rail crossing would be constructed. That number was determined to be approximately 676 vehicle trips. When added to the previous count of 954 ADTs on Graylawn Avenue, the total ADT on Graylawn were calculated to be 1,630 ADTs, which could have been accommodated within the 2,000 ADT design standard, and the original Project was found to not cause an exceedance of the City's design standard. The Draft EIR also presented an additional scenario whereby the Shasta Extension and rail crossing would not occur, and all traffic generated by the original Project would rely on Graylawn (only) for ingress and egress. That scenario indicated that if all 1,808 ADT from the original Project were added to the previous count of 964 ADT on Graylawn, it would result in 2,762 vehicle trips per day, thereby exceeding the design standard for this road. With fewer units (and a component of trips also assumed to use Jess Avenue), the Revised Project would generate fewer trips on Graylawn than was presented in the Draft EIR pursuant to this scenario.

Pedestrian and Bicycle Circulation

> The Revised Project would create an inconsistency with adopted bicycle and pedestrian system plans, guidelines, policies and standards of the City of Petaluma. (**Less than Significant**)

Like the original Project, the Revised Project does include elements of a comprehensive pedestrian and bicycle circulation system that are consistent with the City of Petaluma's General Plan 2025 Mobility Report recommendations:

- A new sidewalk would be constructed along the Revised Project's frontage of Graylawn Avenue that would continue into the site. This would enhance pedestrian connectivity between the site and Graylawn Avenue and Payran Street, and provide enhanced access to local schools and shopping

centers. The Revised Project includes a landscape strip between the sidewalk and the street, as City Standards direct.

- The Revised Project also includes construction of a Class I multi-use bicycle/pedestrian path along its frontage of the Petaluma River, from the existing path's terminus at the Oak Creek Apartments to the northwesterly site boundary near the east side of the SMART rail tracks.

Walking Distance and Crossing Safety at Payran

Pursuant to the General Plan 2025 Mobility Report's goals and policies, walking distances greater than one-quarter mile (approximately a five to 10-minute walk) from a residential neighborhood to a retail center or transit stop is undesirable.[6] The walk from the site to the nearest retail and transit facilities (which are along Petaluma Boulevard North) would be approximately one-half mile via Graylawn Avenue and Payran Street, exceeding the one-quarter mile transit accessibility standard for transit riders. Furthermore, this route would require pedestrians and bicyclists from the Revised Project to cross the existing rail tracks at Payran Street. At the time the Draft EIR was published, the crossing at Payran/SMART Rail was an at-grade crossing that had been improved to minimal safety and ADA standards, with sidewalks and crosswalk striping on both sides of the street (see **Figure 3-3**). In September of 2019, this crossing was further upgraded by SMART as part of their Payran Street Rail Crossing project, and enhancements now include two 4- to 6-foot wide low fence barriers at each sidewalk approach, curb barriers, yellow rumble strips in the sidewalk, and yellow "Watch for Train" diamonds stenciled on the sidewalk (see also Figure 3-3). While pedestrians would still have to walk beyond a typically desirable walking distance to or from retail or transit services, and the Revised Project would increase pedestrian and/or bicycle usage at the existing Payran crossing, the improvement work envisioned by Mitigation Measure Transp-9C was completed by SMART in September 2019, and no further mitigation is necessary.

Mitigation Measures

The Draft EIR included an analysis of a scenario where neither an elevated bridge nor an at-grade crossing occurred, and all pedestrian and bicycle trips to and from transit or nearby retail facilities occurred at the existing Payran rail crossing. Mitigation Measure Transp-9C was recommended to provide residents with safe and effective pedestrian and bicycle access to retail and transit facilities. Those improvements that would have been required pursuant to Mitigation Measure Transp-9C have already been made by SMART, and this measure is no longer required of the Revised Project:

The pedestrian and bicycle improvements that have been made at the Payran Street rail crossing would compensate for inconsistencies with adopted pedestrian or bicycle system plans and safety standards of the City's 2025 Mobility Report, and have reduced potential pedestrian and bicycle safety impacts of the Revised Project to a less than significant level. This conclusion is substantially different from the conclusions reached in the Draft EIR related to pedestrian and bicycle hazards associated with the Shasta at-grade crossing. Since the Revised Project no longer proposes the Shasta crossing, Mitigation Measure Transp-9A: Grade Separated Bridge and/or Mitigation Measure Transp-9B: At-Grade Rail Crossing Safety Measures, are also no longer applicable or necessary to address unsafe pedestrian and bicycle access (see Chapter 7: Revisions to the Draft EIR).

6

Prior Payran Street Crossing Improvements, at the time of publication of Draft EIR

Current Payran Street Crossing Improvements, as of September 2019

Figure 3-3
Crossing Improvements at the Payran Street/
SMART Rail Crossing

Hazardous Conditions – Rail Crossing

The Revised Project **does not** result in increased hazards associated with an at-grade rail crossing at a potentially unsafe location. (**Less than Significant**)

Unlike the original Project, the Revised Project does not propose construction of a new Shasta Avenue at-grade crossing of the SMART railroad right-of-way. If constructed as proposed pursuant to the original Project, such a crossing would have been a safety hazard for new residents, for others who may have chosen to drive across the new at-grade crossing, and for railroad operations due to the increased possibility of train collisions and train-related accidents.

This conclusion is substantially different than the conclusion reached in the Draft EIR for the original Project and its then-proposed at-grade rail crossing. The Revised Project eliminates the hazardous condition that would have otherwise been introduced by the Shasta Avenue at-grade crossing of the SMART rail tracks. The Revised Project is consistent with CPUC recommendations against the creation of new at-grade rail crossings. Without the original Project's at-grade rail crossing, the Revised Project would not introduce a significant safety hazard to traveling motorists, emergency responders or the rail carriers, and mitigation measures (i.e., a grade-separated vehicle bridge or at-grade rail crossing safety improvements as recommended pursuant to Mitigation Measures Transp-7A and -7B) are not warranted (see Chapter 7: Revisions to the Draft EIR).

Emergency Access

The Revised Project **does** provide adequate emergency access to the future residential development site. (**Less than Significant)**

The Draft EIR recognized that the original Project's Shasta Avenue Extension and at-grade rail crossing may prove to be infeasible, and included an analysis of emergency access without the Shasta Avenue Extension. Like the Revised Project, that analysis in the Draft EIR assumed access to the Project site would be limited to Graylawn Avenue and the Bernice Court EVA. Pursuant to the Petaluma Fire Code, Chapter 17.20, Section D107.1, "developments of one- and two-family dwellings, where the number of dwelling units exceeds fifty (50), shall be provided with two (2) separate and approved fire apparatus access roads." In 2014, the Petaluma City Engineer and Fire Marshal reviewed the proposed Bernice Court EVA route and found that, even with Graylawn as the only primary access route, the Bernice Court EVA provided an acceptable second emergency vehicle access road to serve the Project, but also indicated that two points of public roadway connections would be preferable.[7] Similar to the Draft EIR conclusion with Graylawn as the only primary access route, the current Fire Marshal has reviewed the Revised Project's Bernice Court EVA and has accepted the prior 2014 determination that the Bernice Court EVA would provide emergency vehicle access to serve the Project, but indicated that two points of public roadway connections would be preferable to meet current policies and industry best practices. In addition, the City Fire Marshal provided the following recommendation to be added to this EIR:

> **Recommendation Transp-7/Haz-7, EVA Design**: To ensure that the Bernice Court EVA is continuously available for emergency use, the EVA connection at Bernice Court shall include design measures including, but not limited to bollards, red curb or red pavement striping, no-parking signage, etc., intended to prohibit parking and other obstructions at this EVA access. Final EVA design measures shall be subject to review and approval by the Fire Marshal.

[7] Personal communication between Tiffany Robbe (City Planner), City Engineer and Fire Marshal, October 2014. In 2019, the City Engineer and Fire Marshal reviewed the prior communication, accepted the previous determination, and recommended Recommendation Haz-7, EVA Design.

Impacts related to emergency access would be less than significant. This conclusion is different that the conclusion reached in the Draft EIR for the original Project and its then-proposed at-grade rail crossing. The Petaluma Fire Department's prior finding that access via an at-grade rail crossing would have a higher likelihood of blocking emergency vehicle access than does a typical street no longer applies to the Revised Project. Without the original Project's at-grade rail crossing, the Revised Project would not introduce a significant hazard related to emergency access and Mitigation Measure Transp-9A: Grade Separated Bridge and/or Mitigation Measure Transp-9B: At-Grade Rail Crossing Safety Measures are no longer applicable or necessary to address emergency access (see Chapter 7: Revisions to the Draft EIR).

Similar Environmental Conclusions

Whereas the Revised Project is still an apartment development with more than 200 units and is to be located on the same site, many of the environmental implications of the Revised Project are similar to those of the original Project. Those impacts of the Revised Project similar to impacts of the original Project and mitigation measures that remain applicable to the Revised Project are summarized below.

Aesthetics

Scenic Vistas

The Draft EIR concluded that the original Project would not have a substantial adverse effect on a scenic vista, or on views of significant landscape features or landforms as seen from public viewing areas. The 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 identified in the Petaluma IZO section 16.040.Q. Although the site can be seen from numerous other publicly accessible vantage points, views across the site from these locations are not formally identified scenic vista. (**Less than Significant**)

Visual Character

Similar to the original Project, the Revised 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**)

There is nothing inherently degrading to visual character about the development of new residential uses on this site. The property is adjacent to existing multi-family residential development at the Oak Creek Apartments and is located in an area of primarily residential uses. The site is recognized in the General Plan as appropriate for development of a diverse range of residential densities and may be a location where infill development at equal or higher density than surrounding uses may be appropriate, when coupled with an enhanced River corridor and tree protection. Like the original Project, the Revised Project will substantially change the visual qualities and characteristics of the site. However, the introduction of a medium density multi-family residential land use at 2-stories in height (or stepping up to 3-stories where not abutting neighboring residents) is generally consistent with the visual character of the adjacent Oak Creek Apartments. 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 new apartments, and a setback of at least 25 feet from shared property lines. Pursuant to Section 24.010 of the IZO, architectural and site plan review will take place prior to the issuance of any building permits. At that time, the precise massing and architectural design will be reviewed against required setbacks, height limitations, site coverage and other development standards. These standards, as reviewed pursuant to the SPAR process, will ensure that the proposed development is attractive and consistent with existing development in the vicinity.

To accommodate flood terracing, the Revised Project will (like the original Project), result in removal of vegetation from the western Petaluma Riverbank. However, the Revised Project maintains all protected trees within the River Corridor including oaks, box elder, and an area of high value willows and the Revised Project's HMMP will result in restoration and expansion of this riparian corridor.

As indicated in the Draft EIR, implementation of the following mitigation measures (which are applicable to the Revised Project) will reduce potential impacts to the visual character and quality of the site to less than significant levels:

> **Mitigation Measure Visual-3A, Inclusion in SPAR**: The Site Plan and Architectural Review process shall include evaluation and review of the Revised Project's plans to accommodate significant trees, provide adequate setbacks and/or landscaping, create linear open space corridors, and potentially utilize a single-loaded street near the River corridor as means to ensure maximum public accessibility and visibility.
>
> **Mitigation Measure Visual-3B, RODZ review at SPAR**: The Site Plan and Architectural Review process shall include evaluation and review of the Revised Project for consistency with River Oriented Development Zone (RODZ) policies and design guidelines (from River Plan pages 79-80, and Chapter 9: Design Guidelines.) The northern portion of the site that is within the RODZ (APN -009) shall be designed pursuant to the RODZ Guidelines.
>
> **Mitigation Measure Visual-3C, Ensuring Preservation of Existing Trees**: Preservation of all existing trees on the Project site may conflict with reasonable land development considerations and with creation of the terraced grading as directed by the General Plan. However, the final design for the residential portions of the site should be designed to reflect the goal of preserving protected trees to the greatest extent possible. The final design of the Project, to be reviewed at SPAR, shall seek to preserve the most desirable and significant healthy trees on site.

With implementation of these mitigation measures, the Revised Project would comply with City of Petaluma plans, policies and ordinances pertaining to aesthetics and design, and the impact would be reduced to a level of less than significant.

Light and Glare

New development at the site will create new sources of light and glare that could adversely affect day or nighttime views, or that could be considered a nuisance pursuant to the definitions established under the City's IZO. (**Less than Significant with Mitigation**)

In order to ensure compliance with regulatory requirements for glare as found in Section 21.010 of the IZO, the Draft EIR recommended the following mitigation measure, equally applicable to the Revised Project:

> **Mitigation Measure Visual-4, Glare Minimization Design Standards**: Measures (such as fixtures that cast light in a downward direction, lighting designed to minimize glare and direct views of light sources, lighting that does not blink, flash or of unusually high intensity, etc.) shall be applied to reduce light and glare at the site.

With implementation of this mitigation measure, the amount of light and glare emanating from the site would be reduced to less than significant levels.

Air Quality

Conflict with Air Quality Plan

Like the original Project, the Revised Project would not conflict with or obstruct implementation of the applicable air quality plan. The Revised Project will not impede implementation of air quality control measures, will have no impact related to an inconsistency with the Clean Air Plan and is consistent with development assumptions as included in the 2017 Clean Air Plan. (**No Impact**)

Construction Period PM10 Emissions

Similar to the original Project, the Revised 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. Although construction activities associated with site preparation, grading (including the terraced grading plan along the riverbank), building construction, landscape installation and site paving would be temporary, these construction activities have the potential to cause both nuisance and health-related air quality impacts. As indicated in the Draft EIR, implementation of the following mitigation measures (which are applicable to the Revised Project) will reduce potential construction-period dust impacts:

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

With implementation of MM AQ-2A and -2B, potential impacts to air quality from construction-period fugitive dust emissions would be reduced to levels below significance. (**Less than Significant with Mitigation**)

Criteria Pollutant Emissions from Construction Activities

Construction of the Revised Project would generate slightly less emissions of criteria air pollutants (ROG, NOx, PM10, and PM2.5) and evaporative emissions (ROG) than the original Project due to its smaller size, and like the original Project, these emission levels would not exceed applicable air quality thresholds. At 205 units, the Revised Project is below BAAQMD's screening size for a mid-rise apartment project (240 units) and therefore will have less than significant construction-period criteria pollutant emissions. (**Less than Significant**)

Construction-Period Toxic Air Contaminant Emissions

Use of heavy-duty, off-road and on-road construction equipment could produce emissions of toxic air contaminants (including diesel PM2.5) and, like the original Project, emissions from these construction activities could exceed thresholds for off-site community risk and hazards. To address the potentially significant construction-period health risk impacts associated with emissions of toxic air contaminants, the following mitigation measure from the Draft EIR, which are also applicable to the Revised Project, 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) under certain circumstances.

Use of Tier 4 off-road construction equipment engines can reduce tailpipe emissions of particulate matter (including PM2.5, or DPM) by as much as 95 to 97 percent over tailpipe emission levels from non-regulated engines. A 96% reduction in construction-period emissions 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 PM2.5 concentrations. 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. (**Less than Significant with Mitigation**)

Operational Air Quality Emissions

Operation of the Revised Project will result in new emissions, primarily associated with new vehicle trips. However, analysis included in the Draft EIR showed that the original Project would not generate new operational emissions that would violate air quality standards, contribute substantially to an existing or projected air quality violation or otherwise exceed established thresholds. Compared to the original Project, the Revised Project would have fewer residential units and would generate fewer vehicle trips. Therefore, the Revised Project would similarly not generate new operational emissions that would violate air quality standards, contribute substantially to an existing or projected air quality violation or otherwise exceed established thresholds. (**Less than Significant**)

Odors

As concluded in the Draft EIR, routine activity associated with residential uses at the site pursuant to the revised Project would not generate offensive odors that would affect substantial number of people, and this impact would be less than significant. (**Less than Significant**)

Biological Resources

Special Status Plant Species

As indicated in the Draft EIR, special status plant species were determined to have either low potential for being present, or were determined to be not present at the Project site. As concluded for the original project, the Revised Project would not result in a substantial adverse effect on candidate, sensitive or special-status plant species, either directly or through habitat modification. (**Less than Significant**)

Special Status Bird and Bat Species

The Draft EIR concluded that grading and construction activities on the site had the potential to affect special status bird species, possibly including White-Tailed Kite, Allen's Hummingbird, Loggerhead Shrike, salt marsh common yellowthroat, several raptor species and potential suitable roosting habitat for some bat species such as the pallid bat. To address the potential for grading and construction activities to affect special status bird species, the following mitigation measures, which are also applicable to the Revised Project, were recommended:

> **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.
>
> **Mitigation Measure Bio-2b, Pre-Construction Tree Roost Surveys:** For all tree removal and vegetation management activities, measures shall be implemented to protect bats.

The required nesting surveys and protection of any identified nests or roost as required pursuant to MM Bio-2a and 2b would prevent harm to special status bird and bat species, and would prevent harm to common types of birds. (**Less than Significant with Mitigation**)

Special Status Reptile, Amphibian and Fish Species

The Draft EIR concluded that grading and construction activities associated with the original Project's terraced grading plan along the banks of the River, including trimming and clearing of vegetation along the bank, could result in the removal of habitat for California red-legged frog and Western pond turtle, and degradation of special status fisheries habitat. As with similar terraced grading pursuant to the Revised Project, the applicant shall obtain all required authorizations from the U.S. Army Corps, the RWQCB, the California Department of Fish and Wildlife, and other regulatory agencies with jurisdiction for the disturbance of waters of the U.S. and their associated aquatic habitat. The applicant shall also implement the following mitigation measures, in addition to all avoidance and minimization measures as required by the resource agency authorizations:

> **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.
>
> **Mitigation Measure Bio-3C, Relocation**: If any special status species are found, they shall be relocated 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.
>
> **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.

Implementation of the above mitigation measures would reduce potential impacts of the Revised Project on special status species and sensitive habitats, and that with a reconstructed River terrace and implementation of the HMMP complete, habitat for these species will be restored and possibly increased. (**Less than Significant with Mitigation**)

Seasonal Wetlands

The Draft EIR determined that development of the original Project would have resulted 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. A recent (January 2019) determination confirmed these jurisdictional wetland locations and extent.[8] These wetlands are also considered Waters of

[8] Department of the Army San Francisco District, U.S. Army Corps of Engineers Regulatory Division, Subject: File Number 2004-255710, letter to Mr. Doug Spicher, Wetland Research Associates, dated January 30, 2019

the State and regulated by the Regional Water Quality Control Board, San Francisco District (RWQCB) under CWA Section 401 and/or Porter-Cologne Act.

Seasonal wetlands on the site were found to include eight depressions and swales totaling 0.62 acres. This includes a deeper seasonal wetland of 0.28 acres near the Oak Creek Apartments and just above the river, six small isolated seasonal wetlands comprising 0.33 acres that are isolated from the river and above the 100-year flood elevation and located on the Project site's westerly side near the SMART rail line, and one small 0.01-acre wetland along the riverbank. Like the original Project, the Revised Project will involve construction work in two areas; the Petaluma River terraced grading, and the residential development on the uplands. Work in the upland development area will result in fill of the 0.33 acres of six separate small seasonal wetlands near the SMART rail corridor, and terraced grading will result in fill of the small 0.01-acre wetland lowest along the riverbank – or a total of 0.34 acres of filled wetlands. The largest seasonal wetland (approximately 0.28 acres in size) located just outside of the upper bank of the River (near the Oak Creek Apartments) will be avoided and preserved.

Like the original Project, the Revised Project's HMMP proposes creation of new perennial and seasonal wetland habitat as mitigation for impacts to wetlands by augmenting habitat value and increasing habitat complexity along the River. Terraced grading along the River edge includes construction of two new seasonal wetlands with appropriate wetland hydrology and native wetland plant establishment, and creates approximately 0.47 acres of seasonal wetland habitat. These newly created wetlands are approximately 0.07 acres less than the 0.54 acres that was proposed pursuant to the original Project. The slightly smaller size of newly created wetlands is the result of efforts pursuant to the Revised Project to retain existing oak trees rather than creating additional wetlands in these areas. The 0.47 acres of created wetlands will still replace and/or exceed the functions and values of the approximately 0.34 acres of seasonal wetland that will be filled as a result of the Revised Project. As indicated in the Draft EIR, the applicant will be required to obtain all required authorizations from the US Army Corps and RWQCB (as applicable) for the loss or disturbance of on-site seasonal wetlands resulting from development of the property. The applicant shall also implement the following mitigation measures, in addition to all permit requirements as may be established by resource agency authorizations, which may be further clarified or expanded upon through the Corps and RWQCB permitting process:

> **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. The newly created, restored or enhanced wetlands shall provide higher quality wetlands habitat value than the low value habitat lost as a result of Project fill and terrace grading.
>
> a) Final site plans should seek to avoid and retain wetland features where feasible.
>
> b) Compensatory wetland habitat shall ensure no net loss of habitat functions and values.
>
> c) Compensatory ratios shall be based on site-specific information and determined through coordination with the Corps and RWQCB.
>
> d) 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.

With implementation of the identified mitigation measure, the City will ensure that wetland mitigation fully compensates for the loss of wetland acreage and wetland habitat values resulting from the Project, such that there is no net loss of wetland acreage and values. The mitigation measure identified above is the City of Petaluma's baseline mitigation requirements (as lead agency). Subsequent permit requirements may result in

different (potentially greater) mitigation obligations, particularly regarding compensatory mitigation ratios, which shall be based on site-specific information and determined through coordination with the Corps and RWQCB. (**Less than Significant with Mitigation**)

Riparian Habitat

Similar to the original Project, the Revised Project's proposed terraced grading plan for the banks of the Petaluma River would result in adverse effects on riparian habitat. Riparian scrub vegetation occurs along the Petaluma River and extends approximately 50 to 100 feet out from the center of the River channel onto the adjacent floodplain, covering approximately 1.92 acres of the site. The vegetation consists primarily of thickets of willow, blackberry and teasel. The functions and values of these riparian scrub habitats along the River range from low to high. As habitat value, the patches of non-native Himalayan blackberry rate low because they are generally homogeneous stands and nearly impenetrable to most species of wildlife, whereas willows and other native vegetation have a high rating for wildlife habitat value.

Grading for the proposed river terraces will entail removal of existing Himalayan blackberry, followed by bank grading and re-contouring to achieve a floodway and floodplain terrace adequate to attenuate flood flows. Like the original Project, the Revised Project's river terracing will remove approximately 1.62 acres of riparian habitat (most of which is considered lower quality non-native Himalayan blackberry vegetation) but approximately 0.30 acres of higher quality native riparian vegetation along the River would be avoided, where practical, without severely diminishing the hydraulic flood flow capacity of the terracing project. Like the original Project, the Revised Project would implement a HMMP that will include preservation of existing highest value habitat along the river, removal of invasive monocultures of Himalayan blackberry patches, creation and restoration of riparian habitat and revegetation of the graded and re-contoured terrace area with native riparian vegetation. Following grading activities, approximately 2.08 acres of graded terraces will be replanted with riparian trees and shrubs, and an additional area of 0.71 acres along the River will be planted with marsh/wetland plants, for a total of 2.79 acres of replanted riparian habitat. With the 0.30 acres of avoided high quality riparian habitat, the result of on-site riparian habitat preservation and restoration will be 3.09 acres.

The Project applicant will be required to obtain all required authorizations from the CDFW (as applicable) for the loss or disturbance of on-site riparian vegetation resulting from development of the property. 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. The applicant shall also implement the following mitigation measures, in addition to all permit requirements as may be established by resource agency authorizations:

> **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 (such as temporary fencing) to protect riparian and oak woodland trees within and abutting the riparian zone shall be required for river terracing and riverside path construction.

> **Mitigation Measure Bio-5C, Habitat Mitigation and Monitoring Plan**: A final Habitat 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.

With implementation of the required mitigation measures above, the City will ensure the preservation of the maximum extent of riparian habitat while balancing the need for expanded floodway capacity within the Petaluma River. Assuming that necessary permits and approvals are obtained, and their requirements are incorporated as components of (or conditions of) approval for grading permits, potential impacts on riparian habitat would be reduced to a level of less than significant. (**Less than Significant with Mitigation**)

Waters of the US

The wetlands delineation as recently verified by the Corps of Engineers in January 2019,[9] identifies 0.92 acres of non-wetland waters regulated under Section 10 of the Rivers and Harbors Act (mapped in the Draft EIR at Figure 6-3). These non-wetland waters are also considered Waters of the State and regulated by the Regional Water Quality Control Board, San Francisco District (RWQCB) under CWA Section 401 and/or Porter-Cologne Act. Like the original Project, the Revised Project's proposed terraced grading plan is designed to avoid direct disturbance to river waters habitat. Construction activities will be confined to above the ordinary high-water mark. However, as indicated in the Draft EIR, terraced grading activity within the Petaluma River floodway could result in the disturbance of these jurisdictional non-wetland waters. These areas could be indirectly affected through hydrological interruption, alteration of bed and bank, increased sedimentation, and other construction-related activities.

As per the original Project, the Revised Project's HMMP proposes to increase the extent of aquatic habitat in the Petaluma River by grading and re-contouring the western bank of the River and creating new floodplain terraces. The applicant will be required to obtain all necessary authorizations from the U.S. Army Corps, the RWQCB, the California Department of Fish and Wildlife, and other regulatory agencies with jurisdiction (as applicable) for the disturbance of waters of the U.S. and their associated aquatic habitat. The following additional mitigation measure as recommended in the Draft EIR and equally applicable to the Revised Project would further reduce and/or avoid indirect effect to aquatic habitat during construction:

> **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.

With implementation of the mitigation measure above, the City will minimize potential adverse effects to aquatic habitat within the Petaluma River associated with proposed grading along the riverbanks. The mitigation measures identified above are the City of Petaluma's baseline mitigation requirements (as lead agency). Subsequent permit requirements may result in different (potentially greater) mitigation obligations based on site-specific information and determined through agency coordination. Potential impacts on aquatic non-wetland habitat would be reduced to a level of less than significant. (**Less than Significant with Mitigation**)

Native Resident or Migratory Wildlife Corridor

As identified in the Draft EIR, the increased presence of people as well as outdoor lighting associated with new development may adversely affect the behavior of nocturnal animals using the River's riparian corridor

[9] Ibid, January 2019

for cover or foraging. Grading of the floodway terrace and trimming and clearing vegetation next to and within the River may temporarily hinder the migration of aquatic and riparian wildlife species. The following mitigation measures are recommended to reduce and avoid substantial interference with wildlife movement within the Petaluma River corridor. The following mitigation measures as recommended in the Draft EIR are equally applicable to the Revised Project:

> **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-lighting 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)
>
> **Mitigation Measure Bio-7C, Avoidance and Minimization** (see Mitigation Measure Bio-3)

Implementation of Mitigation Measure Bio-7A would reduce the environmental impacts of nighttime lighting on native riparian habitat to a level of less than significant. The City will not issue grading permits for work within the Riverbanks prior to the applicant obtaining all necessary resource agency permits and approvals, including the incorporation of all subsequent conditions and requirements of these agency approvals into the proposed grading plans. With the incorporation of all necessary permit and approval requirements incorporated as components of, or conditions of approval for grading permits, potential impacts on aquatic and riparian wildlife corridors would be reduced to a level of less than significant. (**Less than Significant with Mitigation**)

Habitat Conservation Plans

There are no Habitat Conservation Plans, Natural Community Conservation Plans or other habitat conservation plans approved by local, regional or state agencies that apply to the site. Therefore, the Revised Project would have no impact with the provisions of such plans. (**No Impact**)

Invasive Species

New landscaping associated with development adjacent to the Petaluma River corridor could introduce invasive plant species with low habitat value to the riparian corridor, posing an increased threat to native riparian habitats. Invasion by exotic species can severely degrade the value of riparian areas for wildlife. The following mitigation measures as recommended in the Draft EIR are equally applicable to the Revised Project:

> **Mitigation Measure Bio-9, Incorporation of Native Plants in Landscaping Plans**: As part of the Site Plan and Architectural Review process, the 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 River Plan.

Implementation of the detailed Landscape Plan pursuant to this mitigation measure will reduce potential impacts due to the introduction of non-native species to less than significant levels. (**Less than Significant with Mitigation**)

Spreading Sudden Oak Death

Native oaks have been dying in Sonoma County due to the disease known as sudden oak death, caused by the pathogen Phytopthora ramorum, a fungus associated with wet or moist climates, cool temperatures and living plants. Removal of plant materials that may host Phytophora ramorum during tree removal could result in the spread of Sudden Oak Death to the Petaluma River riparian habitat. The following mitigation measures as recommended in the Draft EIR are equally applicable to the Revised Project:

> **Mitigation Measure Bio-12A, Infected Tree Identification**: Pursuant to the City's tree removal permits, all trees of "at-risk" species to be removed shall be surveyed for sudden oak death pathogens, and individual treatment methods shall be 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 of an infected tree from the property is only recommended if that tree is the first infected tree detected, if 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.

Implementation of the above mitigation measures would reduce the environmental impacts associated the possible spread of sudden oak death to a level of less than significant. (**Less than Significant with Mitigation**)

Cultural Resources

Historical Resources

As indicated in the Draft EIR, no structures remain on the site and no significant historic resources were identified on the site in prior surveys. The surveys did indicate the presence of historic foundations and concrete retaining walls, but none of these was observed to be discrete historic deposits, and many of the demolished building materials had been consolidated into piles and have been since removed. Therefore, none of the buildings and structures that formerly occupied the site retains sufficient integrity to be considered significant. Both field surveys identified the presence of two wells, neither of which were found to be historically significant, but that may contain historic-era debris that might hold the potential to yield information about California History. While it is unlikely that either well contains debris and/or historical artifacts in such a concentration as to be of significant historical value, there remains the possibility that any historical artifacts located in the well could yield valuable information. As such, the following Mitigation Measure identified in the Draft EIR is applicable to the Revised Project:

> **Mitigation Measure Cultural-1, Monitoring of Well Abandonment**: When 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.

With implementation of Mitigation Measure Cultural-1, any significant historic-era artifacts that may be present within the on-site well will be retrieved and evaluated, and potential impacts to significant historical resources will be reduced to less than significant levels. (**Less than Significant with Mitigation**)

Archaeological and Tribal Resources

Like the original Project, the Revised Project has the potential to affect the significance of yet-undiscovered archeological resources. Prior Cultural Resource Studies prepared in 2003 and 2007 identified the presence of a pestle, a fragment of abalone shell, two historic era wells and fragments of ceramics and glass. However, none of these resources appeared to be historically or archeologically significant. This does not preclude the potential that the site may still contain as-yet undiscovered archeological artifacts. The site is located along the banks of the Petaluma River in an area that is known to have been occupied by the Coast Miwok. Therefore, as indicated in the Draft EIR, the site exhibits heightened potential for archeological resources to be present below grade.

On behalf of the City of Petaluma and at the beginning of this EIR process, a Tribal Consultation List Request form was submitted to the Native American Heritage Commission (in October 2007), with follow-up inquiry of tribal representatives as to their interest in consultation on the Project. After State passage of AB 52, the City of Petaluma chose to re-invite the Federated Indians of Graton Rancheria to consult on the Project. Responses to these invitations to consult on tribal cultural resources provided either no comment or indicated that they were unaware of any tribal or cultural resources in the immediate area, from all but the Federated Indians of Graton Rancheria (see Draft EIR Appendices). The Federated Indians of Graton Rancheria requested consultation in December of 2007 and consultation between the City and Federated Indians of Graton Rancheria occurred in January of 2008. Based on these responses, consultation and prior investigations, the Project site is not known to contain tribal cultural resources, either as a sacred place or as a place containing objects with cultural value to a California Native American tribe. In order to ensure that undiscovered archeological resources are not adversely impacted by construction activities, the following mitigation measure from the Draft EIR, as modified based on consultation with the Federated Indians of Graton Rancheria (see Chapter 7: Revisions to the Draft EIR) is equally applicable to the Revised Project:

> **Mitigation Measure Cultural-2: Discovery of Unknown Archaeological or Tribal Resources**. To reduce potential impacts on prehistoric site deposits and or Tribal cultural resources that may be discovered during construction:
>
> a) The applicant shall retain the services of a qualified archaeological consultant approved by the City of Petaluma and from the Federated Indians of Graton Rancheria's list of qualified archaeologists who have also demonstrated the ability to work cooperatively with the Tribe, 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 affect significant archeological deposits or Tribal cultural resources. After considering the types of project activities and the probabilities of encountering a significant archaeological deposit or Tribal cultural resource, 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, cultural soils or Tribal cultural resources is encountered during construction anywhere on-site, all soil-disturbing activities within 100 feet of the discovery shall cease. The archaeological monitor shall have the authority to stop work and temporarily redirect crews and heavy equipment until the resource 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 the identity, integrity and

significance of the encountered resource, present the findings of this assessment to the City and provide treatment recommendations.

With implementation of Mitigation Measure Cultural-2, any potential adverse effects to buried, as-yet undiscovered archeological or Tribal cultural resources would be reduced to less than significant levels. (**Less than Significant with Mitigation**)

Paleontological Resources

Bedrock underlying the site has potential to contain significant paleontological resources. Areas with alluvium soil deposits in close proximity to rivers, such as this site, have been known to contain vertebrate fossils. Destruction of such of currently undiscovered paleontological resources would be a significant environmental impact. To ensure that ground-disturbing activities do not adversely affect any as-yet undiscovered paleontological resources, the following mitigation measure from the Draft EIR is equally applicable to the revised Project:

> **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.

Implementation of Mitigation Measure Cultural-3 will ensure that potential impacts due to the discovery of unknown paleontological resources during grading operations for the Revised Project are reduced to a level below significance. (**Less than Significant with Mitigation**)

Human Remains

Ground-disturbing activities associated with site preparation, grading, and excavation could disturb human remains, including those interred outside of formal cemeteries. The potential to uncover human remains, including Native American human remains, exists throughout California. Although not anticipated, human remains may be encountered during site-preparation and grading activities. In the event that human remains may be encountered onsite, the applicant shall implement the following mitigation measure consistent with the provisions of California Health and Safety Code section 7050.5(b) during all ground-disturbing activities:

> **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 measures shall be undertaken in accordance with the Health and Safety Code Section 7050.5.

With implementation of the Mitigation Measure Cultural-4, any disturbance of human remains would be handled in a manner that would avoid significant impacts, including impacts to Native American remains, and the impact would be less than significant. (**Less than Significant with Mitigation**)

Geology and Soils

Surface Fault Rupture

As documented in the Draft EIR, the site is not within an Earthquake Fault Zones as defined pursuant to the Alquist-Priolo Earthquake Fault Zoning Act of 1972. The nearest Earthquake Fault Zone is the Rogers Creek-Healdsburg Fault Zone located approximately five miles northeast of the site. Since no faults are mapped across the site on any published maps, ground rupture at the site resulting from an earthquake is unlikely, the risk of ground rupture within the site boundaries is considered very low, and the Revised Project would not expose people or structures to potentially substantial adverse effects involving rupture of a known earthquake fault. (**Less than Significant**)

Exposure to Strong Seismic Ground Shaking

As indicated in the Draft EIR, new residential development at the site could expose people or structures to potentially substantial adverse effects involving strong seismic ground shaking. The Draft EIR recommended the following mitigation measures pursuant to regulatory requirements, and these measures remain applicable to the Revised Project:

> **Mitigation Measure Geo-2A, Compliance with California Building Code**: New development on the site shall meet all requirements of the California Building Code, as may be modified by 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, recommendations included in the RGH Consultants' Geotechnical Engineering Report Update for Sid Commons (January 20, 2015) regarding foundation and structural design measures shall be incorporated in final designs for each structure, contingent upon concurrence by the City's Engineer and Chief Building Official. To ensure that appropriate construction techniques are incorporated, the Project'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.

Incorporation of seismic construction standards as required by the regulatory requirements identified in Mitigation Measures Geo-2A and -2B would reduce the potential for catastrophic effects of ground shaking, such as structural failure. These construction standards will not completely eliminate the hazard of seismically induced ground shaking, but will reduce the hazards to a level considered acceptable by the state of California for reducing seismic risks to acceptable levels, and therefore to a level of less than significant. (**Less than Significant with Mitigation**)

Liquefaction

Similar to the original Project, the Revised Project would not expose people or structures to potentially substantial adverse effects involving seismic-related ground failure, including liquefaction. To assess the potential for liquefaction and the extent and consequences of liquefaction should it occur at the site, a detailed geotechnical exploration of the site was performed (RGH Engineers, Draft EIR Appendix 8B). Based on this detailed geotechnical report, the planned development area of the site and the area within the proposed River terrace do not exhibit a potential for liquefaction. Because these detailed studies indicate no potential for liquefaction within the development areas of the Project site, no mitigation measures are required. (**Less than Significant**)

Landslides

Similar to the original Project, the Revised Project would not expose people or structures to potential substantial adverse effects due to the risk of loss, injury or death involving landslides. Those portions of the Project site proposed for new development are generally flat and present no potential for landslide hazards. The only portion of the Project site where landslide potential is of concern is along the Riverbank, where the proposed terracing plan along the Petaluma River may encounter bank instability. A slope stability analysis was performed for the site (as presented in the Draft EIR), finding that there are no geotechnical hazards related to slope stability for the river terrace and as such, no mitigation measures are required. (**Less than Significant**)

Expansive Soils

Portions of the site proposed for development contain localized expansive soil, creating substantial risks to property. Expansive clay soils are potentially damaging to foundations as these soil types shrink and swell in response to changes in moisture content. Near the surface, the resulting movement can lead to cracking and settlement of lightly loaded shallow foundations (spread footings) that could eventually undermine structures. Expansive soils can also cause damage to roadways and sidewalks, as well as underground conduits. Soil borings conducted at the site encountered near-surface expansive soils that could be exposed at the surface after grading is complete. These expansive soils can affect the performance of structures, and this impact is considered potentially significant. The impacts of expansive soils can be mitigated by grading and/or foundation design measures as identified in the Draft EIR, which are also applicable to the Revised Project:

> **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.
>
> **Mitigation Measure Geo-5B, Foundation Design**: New structures shall be supported on either post-tension slab foundations or mat slab foundations. These foundation 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.

Implementation of the above mitigation measures will reduce the potential impact of expansive soils to less than significant levels. (**Less than Significant with Mitigation**)

Soil Erosion

As indicated in the Draft EIR for the original Project, the Revised Project could result in the loss of topsoil resulting from development on potentially erodible soils. Grading activities at the site pursuant to the Revised Project will be substantially similar to grading as proposed pursuant to the original Project, although grading for new development will be more substantially set back from the River Corridor. Grading will still be required to provide level surfaces for roads and structures, and excavation of expansive soils at the site will involve disturbing and removing the topsoil. Substantial grading activities will also be necessary to implement the proposed River terracing plan. To address potential erosion impacts, the following mitigation measure from the Draft EIR is also required of the Revised Project:

> **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.

Implementation of this mitigation measure would reduce potential impact of soil erosion during construction to a level of less than significant. (**Less than Significant with Mitigation**)

Septic Systems

Like the original Project, the Revised Project would not rely on septic tanks or alternative wastewater disposal systems dependent on appropriate soil capabilities. A municipal sewer system is present in the area and will be used by the Revised Project. (**No Impact**)

Loss of Mineral Resources

Development of the site 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. (**No Impact**)

Greenhouse Gas Emissions

Construction Activity Emissions

The total construction-period emissions calculated for the original Project were estimated at 1,317 MT CO2e. By dividing these total emissions over a 1.5-year construction period, the one-year emission rate as presented in the Draft EIR was approximately 878 MT CO2e. In the absence of thresholds for construction-related greenhouse gas emissions, emissions from construction were conservatively compared to the threshold of significance for operation (1,100 MT CO2e/year), and found to generate emissions that fall below that threshold. Construction of the Revised Project includes less total residential units but comparable grading and paving activity. It is not expected that construction activity associated with the Revised Project would result in greater GHG emissions than assumed for the original Project, and construction period GHG emissions due to the Revised Project would be similarly less than significant. (**Less than Significant**)

Project Operational Emissions

The Draft EIR calculated that the original Project would generate greenhouse gas emissions from both direct and indirect sources that would produce approximately 2,590 metric tonnes of CO2e per year, exceeding the annual significance threshold of 1,100 MT/year. The majority of GHG emissions attributable to the original Project (approximately 71 percent) were mobile source emissions from future resident's vehicles. The original Project would have resulted in 278 new residential units, accounting for a service population of approximately 723 people. By dividing these annual GHG emissions by the original Project's service population resulted in a service population ratio of approximately 3.58 MT CO2e per service population per year, below the significance threshold of 4.6 MT CO2e/SP/year, or less than significant.

The Revised Project has fewer residential units generating comparatively fewer operational GHG emissions. As a very conservative assumption, the Revised Project could result in similar levels of GHG emissions from area sources, energy, waste and water, as would the original Project. However, the Revised Project would include 74 percent of the original Project's residential units, generating 74 percent of the original Project's vehicle trips and 74 percent of its calculated mobile source emissions. By adding the lowered mobile source emissions attributable to the Revised Project to the same area source, energy, waste and water emissions as calculated for the original Project, total GHG emissions from the Revised Project are conservatively calculated at 2,104 metric tonnes of CO2e per year. Dividing these annual GHG emissions by the effective service population of the Revised Project (calculated at 205 households times 2.6 persons per household, or 533 residents) results in a service population ratio of approximately 3.95 MT CO2e per service population per year, below the significance threshold of 4.6 MT CO2e/SP/year, or less than significant. (**Less than Significant**)

Consistency with GHG Reduction Plans

Similar to the original Project, the Revised Project would not fundamentally conflict with an applicable plan, policy or regulation adopted for the purposes of reducing greenhouse gas emissions. As stated in the Draft EIR, the adopted regulations pursuant to AB 32 and SB 375 are used to assess consistency. The numeric significance thresholds as used in the Draft EIR (1,100 MT/year and 4.6 MT CO2e/SP/year) were formulated

based on the reduction strategies of AB 32. Since the Revised Project would not exceed the significance threshold, it would not conflict with applicable plans, policies and regulations adopted for purposes of reducing GHG emissions. Furthermore, the Revised Project will be required to comply with all CALGreen + Tier 1 building code requirements per City of Petaluma ordinances. Like the original Project, the Revised Project is consistent with applicable GHG Reduction Plans and impacts due to a potential conflict would be less than significant. (**Less than Significant**)

Hazards and Hazardous Materials

Registered Hazardous Materials Sites

The site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, including the DTSC's EnviroStor database and the SWRCB's GeoTracker database. A Phase 1 ESA revealed that the site has not been adversely impacted by any environmental releases, either off-site or on-site. However, the Phase 1 report did recommend that the surface soil at the site be tested for pesticides prior to development because of its former agriculture use. Consistent with that recommendation, the following mitigation measures, as amended (See Chapter 7: Revisions to the Draft EIR) are also applicable to the Revised Project:

> **Mitigation Measure Haz-1A, 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, agriculture-related petroleum hydrocarbon spills, lead-based paint or elevated levels of contaminants near the rail tracks to be present in the soils at levels exceeding recommended health screening levels. Should any impacted soil be discovered that exceeds human health screening levels for residential soil as noted in DTSC's HERO HHRA Note 3 criteria 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.
>
> **Mitigation Measure Haz-1B, Discovery of Unknown Contaminants**: If unknown contamination, underground tanks, containers or stained or odorous soils are discovered during construction activities, appropriate investigation, sampling and comparison of data collected with health-based screening levels and/or consultation with a regulatory oversight agency shall be conducted.

With implementation of Mitigation Measure Haz-1A and 1B and compliance with all applicable regulatory requirements regarding California Human Health Screening Levels for residual pesticides, the impacts of the Revised Project regarding hazardous materials exposure will be reduced to a level of less than significant. (**Less than Significant with Mitigation**)

Routine Transport, Use or Disposal of Hazardous Materials

It is likely that equipment used during construction activities will utilize substances considered by regulatory bodies as hazardous. These substances likely include diesel fuel, gasoline, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues and other substances. Construction of the Project would also require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water pumps and air compressors. Residential uses generally do not utilize substantial amounts of hazardous materials other than incidental use of household chemicals and vehicle fuels. The Project's proposed swimming pool will also likely utilize chemicals such as chlorine as a disinfectant. Like the original Project, routine use of materials considered hazardous during the construction period, routine use of chlorine at the clubhouse pool, and incidental use of household hazardous chemicals pursuant to the Revised Project would be required to comply with applicable regulations regarding the handling of these materials. Compliance with applicable regulatory requirements would minimize hazards to workers, the public and the environment from use of these potentially hazardous products. (**Less than Significant**)

Accidental Release of Hazardous Materials

The potential for an accidental release of hazardous materials into the environment is considered most likely during the construction phase, when concrete, wood preservatives, paint, asphalt and other potentially hazardous materials would be stored, used and moved around on the site and in close proximity to the Petaluma River, potentially harming the aquatic environment. A separate risk could occur from the threat of a spill or leak during routine use of household hazardous materials and chlorine at the pool. Construction contractors will be required to comply with all existing federal and state safety regulations related to the transport, use, handling, storage and/or disposal of fuels or other potentially hazardous substances during all phases of construction. As described in the Draft EIR, the applicant will be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). The purposes of the SWPPP are to control erosion, provide appropriate means for the storage, use and cleanup of fuels and hazardous materials, and to identifying best management practices (BMPs) to protect stormwater runoff. The design requirements and implementation measures to be included in the SWPPP are identified in the Hydrology chapter of the Draft EIR (**Mitigation Measure Hydro-1, SWPPP Requirements**). Implementation of project-specific details of the SWPPP pursuant to MM Hydro-1 (is also applicable to the Revised Project, see further discussion under Hydrology analysis of the Revised Project below) will reduce the potential for accidental spills of hazardous materials to enter the waterway, and the impact will be reduced to a less than significant level. (**Less than Significant with Mitigation**)

Hazardous Emissions within One-Quarter Mile of a School

The site is located one-half mile northwest of the nearest school, McKinley Elementary School. Like the original Project, the types of hazardous materials associated with the Revised Project would be limited to typical household chemicals. The Revised Project does not include any industrial uses or other stationary sources of pollution, toxic air contaminants or hazardous materials that could cause off-site hazardous emissions. The Revised Project would have a less than significant impact to schools located within ¼ mile due to the release of hazardous materials. (**Less than Significant**)

Hydrology

Increased Pollution, Erosion and Siltation during Construction

Similar to the original Project, the Revised Project's grading and construction activity could alter existing drainage patterns of the site in a manner that could result in substantial erosion or siltation, and provide substantial additional sources of polluted runoff. To address construction-period erosion and siltation, as well as the introduction of construction-related sources of water pollution, the applicant will be required to demonstrate compliance with all applicable regulatory requirements. These regulatory requirements include filing a Notice of Intent (NOI) with the RWQCB for compliance with the NPDES General Construction Activities Permit, preparing and implementing a site-specific Storm Water Pollution Prevention Plan (SWPPP) per NPDES general construction permit requirements, and preparing and submitting an Erosion Control Plan for review and approval by the City of Petaluma. All of these regulatory requirements are to be met prior to issuance of a grading permit. In furtherance of these regulatory requirements, the Draft EIR recommended the following mitigation measure, equally applicable to the Revised Project, to provide further detailed requirements and to reduce and/or avoid adversely affecting water quality during construction.

> **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 State and RWQCB design standards.

Mitigation Measure Hydro-1 represents the City of Petaluma's baseline mitigation requirements, but subsequent permit requirements may result in potentially greater mitigation obligations based on site-specific information as determined through agency coordination. With all necessary permits and approvals,

the Revised Project would not violate any adopted water quality standards or waste discharge requirements, and effects on the quality from construction would be less than significant. (**Less than Significant with Mitigation**)

Operational Water Quality

Similar to the original Project, the Revised Project would contribute stormwater runoff that could introduce pollutants that would substantially degrade water quality. The Revised Project could contribute to levels of non-point sources of pollutants and litter entering downstream waters, including the Petaluma River and the San Francisco Bay. An increase in non-point sources of pollutants could have adverse effects on wildlife, vegetation and human health. Parking areas are a source of suspended solids, petroleum hydrocarbons and heavy metals, and the landscaped areas could contribute harmful landscape chemicals, pesticides and fertilizers to runoff leaving the site.

The Revised Project includes an updated preliminary Storm Water Control Plan (SWCP) that shows how the site would be drained by two storm drainage systems (**Figure 3-4**). Prior to being discharged into the stormdrain system, much of the non-point source pollutants washed from roofs, landscape areas and streets and parking areas would be filtered through bioretention areas dispersed throughout site and/or through self-treating impervious paving blocks (e.g., within walkways). Runoff from these bioretention areas will then be collected in a series of underground storm drains that drain into larger bioretention basins located in the northerly portion of the Project site before being discharged via a new storm drain outlets along the banks of the Petaluma River.

The Revised Project will result in a total of approximately 362,430 square feet of impervious surface area, or almost identical impervious surface area as compared to the original Project. The Revised Project has fewer total units but approximately the same surface area covered with impervious surface because the Revised Project proposes 2-story, rather than 3-story, buildings. The preliminary design of stormwater treatment facilities presented in the Revised Project's preliminary SWCP demonstrate a minimum requirement for 15,176 square feet of bio-treatment facilities needed, whereas the Revised Project provides for a total of 16,688 square feet of bioretention area. The Revised Project will be required to demonstrate compliance with the NPDES General Permit for the Discharge of Storm Water from Small MS4s (SWRCB 2013). The Small MS4 General Permit requires the Revised Project proponent to incorporate site design measures, source controls, stormwater treatment measures and/or other low impact development (LID) measures to reduce stormwater runoff and limit the transport of pollutants to receiving waters, and requires implementation of source control measures for specific pollution-generating activities. Pursuant to the City of Petaluma's Stormwater Management and Pollution Control Ordinance, the Revised Project will be required to demonstrate that appropriate BMPs will be implemented to control the volume and potential pollutant load of stormwater runoff from the site. The selection and the design of the BMPs shall be per the City's Stormwater Policy and Design Standards, and per the applicable NPDES permit issued to the City and other available guidance documents (e.g., the California Stormwater Quality Association Best Management Practice Handbooks or equivalent).

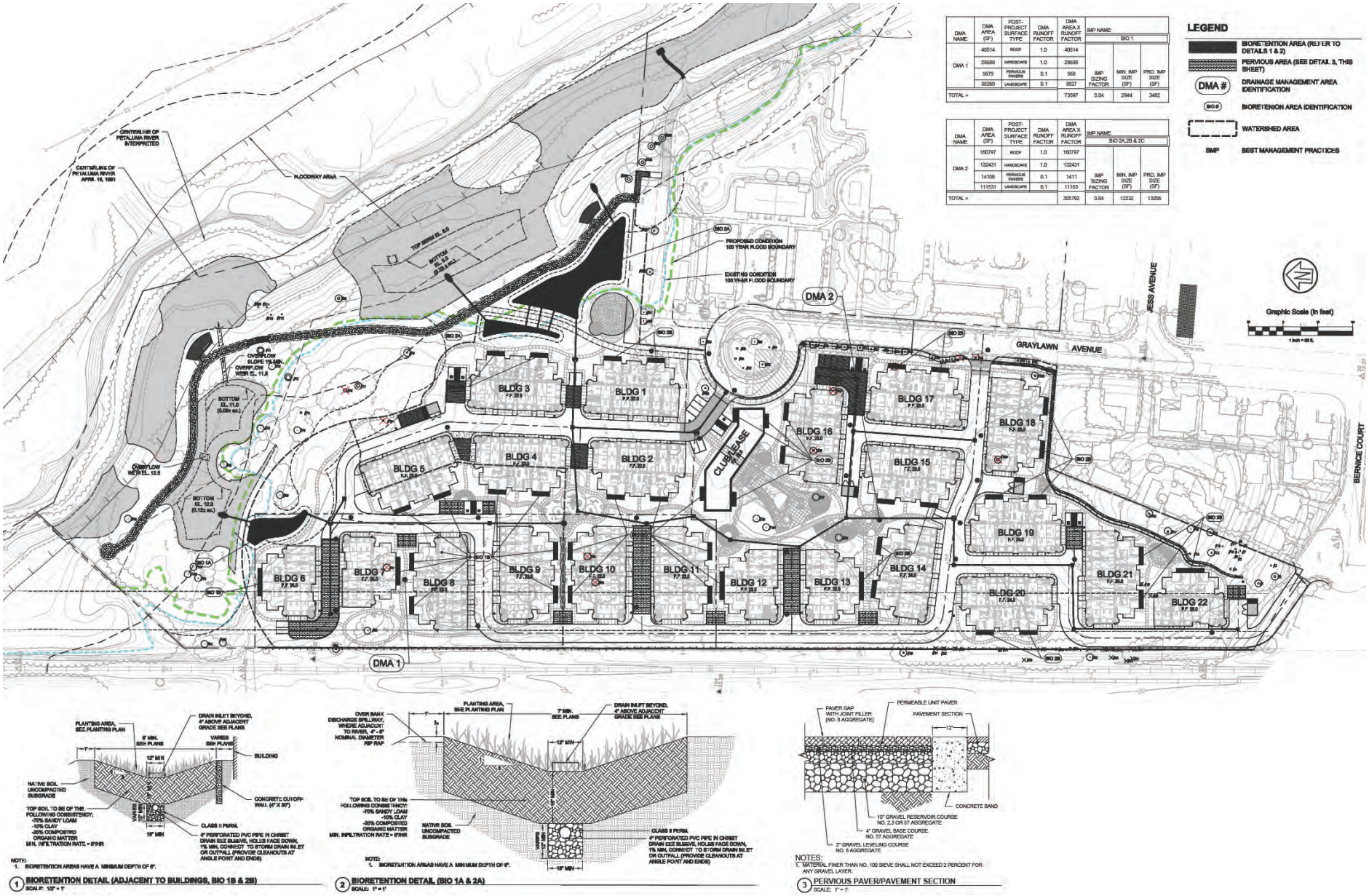


Figure 3-4
Revised Project's Preliminary Storm Water Control Plan

CSW/Stuber Stroeh Engineering Group, 04-19-19

In furtherance of these regulatory requirements, the following mitigation measures apply to the Revised Project to reduce and/or avoid adversely affecting 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.
>
> **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.

The regulatory requirements and Mitigation Measures identified above would reduce effects on the quality of storm water runoff from the Project site to less than significant levels. The mitigation measures identified above are the City of Petaluma's baseline mitigation requirements, and subsequent permit requirements may result in different (potentially greater) mitigation obligations based on site-specific information and determined through agency coordination. (**Less than Significant with Mitigation Measures**)

Development within the Floodplain

Like the original Project, the Revised 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. The Revised Project would not place new housing within the 100-year flood hazard area as defined on applicable (February 2014) FEMA Flood Insurance Rate Maps. A more detailed floodplain delineation has also been established for the site, using the city's latest high-performance Storm Water Management Model (XP-SWMM). According to the XP-SWMM delineation, the Revised Project does not place any apartment structures within the 100-year floodplain as delineated in the City's XP-SWMM model. (**Less than Significant**)

Increased Stormwater Runoff

Similar to the original Project, the Revised Project will increase the rate and amount of surface runoff from the site, but not in a manner that will result in flooding on- or off-site, nor would it create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

The Revised Project is set back further from the River than was the original Project and has fewer residential units, but has almost an identical coverage of impervious surface area as did the original Project (which covers approximately 8.32 acres with impervious surfaces). This same impervious surface area will result in similar increased surface runoff from the site as analyzed for the original Project in the Draft EIR.

The site is located in the lower reaches of the Petaluma River watershed. Analysis presented in the Draft EIR (beginning at page 11-26) concluded that, because of the site's location within the downstream portion of the watershed, existing runoff from the site leaves the site and passes downstream in the River prior to the onset of larger peak flows generated further upstream in the watershed. Storing runoff on-site would delay flows leaving the site and coincide with the arrival of peak flows from the upper watershed, which could increase flood levels in the River. Projects immediately adjacent to the River in this area of the watershed can minimize flood impacts by letting their runoff leave the site and enter the downstream drainages as quickly as possible.

As indicated in the Draft EIR, the increased flood flows attributable to the original Project near its outfall location showed a minor increase in the peak 100-year storm flow in the River of about 0.1 percent. This increased flow was found to be within the limits of model tolerances and was not considered significant.

Increased runoff due to the original Project, combined with increased capacity of the river channel associated with the original Project's terraced grading would result in similar, minor increases in 100-year storm flows downstream of the site (less than one-half of 1% at all measured locations). The increased flows at further downstream locations appear to be attributable to the increased capacity of the River channel and its ability to convey increased flows downstream. The Revised Project will result in a total of approximately 362,430 square feet of impervious surface area (or an almost identical coverage of impervious area as compared to the original Project). This increase in impervious surface will generate nearly identical runoff from the site as was modeled for the original Project, and will result in the same less than significant increase in peak 100-year storm flow in downstream reaches of the River. (**Less than Significant**)

River Terracing – Effects on Base Flood Elevations and Flood Boundaries

Similar to the original Project, the Revised 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. Terraced grading is required to be part of any project on this site pursuant to City General Plan policy to improve flood capacity and flow efficiency. Like the original Project, the Revised Project includes a terraced grading plan that would result in a net removal of soil from along the riverbanks, designed to expand the channel capacity to convey 100-year peak flows in the River as part of the citywide flood control efforts. The Revised Project's terraced grading plans result in an approximate 4 percent decrease in expanded channel capacity as compared to the original Project (from 21,140 cubic yards of excavation under the original Project to 20,250 cubic yards of excavation under the Revised Project). This modification to the terracing plan is to allow the Revised Project to preserve the two oak trees that the original terrace design removed.

The Draft EIR presented an analysis of the effects of riverbank terracing at the site using the City-approved 2010 XP-SWMM software. The modeling results indicated a reduction in water surface elevation just upstream of the site of approximately 0.4 feet, and a reduction in water surface elevation at the site of just under 0.4 feet. It also indicated a minor increase in the elevation of peak water surfaces downstream by an average of approximately 0.02 feet (or between 1/4 and 1/3 inch) or within the accuracy tolerances of the hydrology model, with virtually no addition to current downstream 100-year floodplain boundaries.[10]

As was noted in the Draft EIR, the minor increase in downstream Petaluma River water surface elevations was previously documented as part of the Denman Terracing Phase 3 study (a separate terracing project upstream of Corona Road). Therefore, an additional evaluation was conducted to consider the effects of both the approved Denman Phase 3 terracing project, and the original Project's proposed terracing. This evaluation found maximum water surface elevations to be lower than those elevations previously reported and approved for the 2012 Denman Phase 3 terracing project evaluation. The results of this combined evaluation indicate that the resulting maximum water surface elevation with both the Denman Phase 3 terracing and the original Project's terracing projects in flood-prone areas such as C Street and 1st Street in downtown would be lower than previously identified in the 2012 Denman Phase 3 terracing project only. Therefore, impacts due to a change in the surface flood elevation as result of the original Project were found to be less than significant.

A subsequent December 2018 analysis completed for the City of Petaluma evaluated the combined effect of sediment removal in the channel in the vicinity of Corona Road and a proposed detention basin at a property adjacent to the Petaluma River in the Denman Reach (Denman Phase 4). That analysis concluded that the Denman Phase 4 project would result in a further net decrease in peak flow and water surface elevations downstream, and further reductions in water surface elevations of up to about 0.9 feet upstream of Corona Road for the 100-year event. The Denman Phase 4 project is currently under construction. The analysis of base flood elevations as presented in the Draft EIR is conservative, and had the Denman Phase 4 project been

[10] Per Table 11-4 of the Draft EIR

included in the hydrology modeling that was included in the Draft EIR, the resulting water surface elevations would have been lower (i.e., would have resulted in less impact).

Like the original Project, the Revised Project includes a terraced grading plan designed to convey 100-year peak flows in the River. The Revised Project's terraced grading plans result in an approximate 4 percent decrease in expanded channel capacity (from 21,140 cubic yards of excavation, to 20,250 cubic yards of excavation). This modified grading scheme would result in similar reductions in water surface elevations under 100-year flood conditions, with commensurate reductions in 100-year floodplain boundaries upstream and adjacent to the site, and similar slight increase in water surface elevations and virtually no addition to the current 100-year floodplain boundaries downstream of the site. (**Less than Significant**)

Groundwater Depletion/ Recharge

Like the original Project, the Revised Project will not draw upon or otherwise reduce groundwater resources. Development of the site would increase impervious surfaces within the groundwater basin, and to a limited extent reduce stormwater infiltration into the groundwater. However, the development portion of the site is overlain by Yolo and Clear Lake clays, which have low permeability. It is unlikely that the upper portion of the site provides extensive groundwater recharge to the Petaluma Groundwater Basin. The Petaluma River does provide extensive groundwater recharge, and the river and its associated floodway and floodplain will remain as open, impervious surface pursuant to the Revised Project. (**Less than Significant**)

Inundation by Seiche, Tsunami or Mudflow

The site is not located in an area that would expose residents of the Revised Project to inundation by seiche, tsunami or mudflow. The site is nearly level and is not in proximity to any large lake or the ocean. (**Less than Significant**)

Sea Level Rise

Like the original Project, the Revised Project site would not be subject to hazards associated with increased flooding of the Petaluma River due to sea level rise. Sea level rise will affect the Petaluma River because it is a tidally influenced river. An assumed high-level sea rise scenario of up to 5.7 feet (175 cm) coupled with an extreme high tide, a 100-year storm event, and waves would result in elevated River levels and out-of-bank flooding. Under such a scenario, the influence of sea level rise on the Petaluma River is expected to extend north of the East Washington Bridge to near Madison Street, approximately one mile south of the site. This level of sea level rise is not expected to occur until year 2100 and sea level rise conditions this far into the future cannot be presumed with a high level of confidence. Although the Revised Project is located adjacent to the Petaluma River, the site is high enough in the watershed that it will not be significantly impacted by flooding events related to sea level rise. Therefore, sea level rise would have a less than significant impact on the Revised Project. (**Less than Significant**)

Noise

Project Operational Noise

As concluded in the Draft EIR for the original Project, the Revised Project is expected to result in typical noise levels associated with residential development, including voices of the new residents, home maintenance activities, barking dogs and children. Though the noise environment may change noticeably in some areas due to the occupation of the new residences, the noise associated with the proposed residences is compatible with the surrounding land uses, is anticipated by the City's General Plan and therefore is not judged to result in a noise impact. (Less than Significant)

Traffic and Circulation

Pipeline plus Project - Intersection Level of Service

The Revised Project would generate less traffic than was assumed under the original Project. Since the Draft EIR concluded that the addition of traffic generated by the original Project, when added to the Pipeline scenario, would not cause a cumulative level of service standard to be exceeded at any study area intersection, the Revised Project would have a similar less than significant traffic impact under the Pipeline scenario. (**Less than Significant**)

Existing plus Project – Freeway Operations

The Draft EIR concluded that the addition of traffic generated by the original Project would not cause a freeway segment operating at LOS E or better to deteriorate to LOS F. It also concluded that the addition of traffic generated by the original Project 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. Since the Revised Project would generate less traffic than was assumed under the original Project, the Revised Project would have a similar less than significant traffic impact on freeway operations. (**Less than Significant**)

Pipeline plus Project – Freeway Operations

The Draft EIR concluded that the addition of traffic generated by the original Project, when added to the Pipeline scenario, would not cause a cumulative LOS standard established for the freeway system to be exceeded. Since the Revised Project would generate less traffic than was assumed under the original Project, the Revised Project would have a similar less than significant cumulative traffic impact on freeway operations. (**Less than Significant**)

Cumulative plus Project – Freeway Operations

The Draft EIR concluded that the addition of traffic generated by the original Project, when added to the Cumulative scenario, would not cause a cumulative LOS standard established for the freeway system to be exceeded. Since the Revised Project would generate less traffic than was assumed under the original Project, the Revised Project would have a similar less than significant cumulative traffic impact on freeway operations. (**Less than Significant**)

Transit Use

The Draft EIR concluded that the original Project would not result in a significant unanticipated increase in transit patronage beyond the system's current capacity. Since the Revised Project has fewer residential units and therefore fewer anticipated transit users than the original Project, the Revised Project would have a similar less than significant impact on transit use. (**Less than Significant**)

On-Site Circulation

The Draft EIR concluded that the on-site circulation plan of the original Project provided adequate design to accommodate emergency vehicles accessing and circulating within the Project site. The on-site circulation system design of the Revised Project is very similar to that of the original Project. On-site circulation will adequately accommodate emergency vehicles accessing and circulating within the site. (**Less than Significant**)

Construction Traffic

Similar to the original Project, the Revised Project will cause temporary disruption to the transportation network due to construction. The same mitigation measures as recommended in the Draft EIR to address temporary construction impacts of the original Project equally apply to the Revised Project:

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.

Implementation of Mitigation Measure Transp-12 would reduce the temporary construction impacts of the Revised Project to a less-than-significant level.

Utilities

Water Supply

The Draft EIR concluded that water supplies from existing entitlements and resources are available and sufficient to serve the demands of the original Project, and new or expanded entitlements were not needed. The Revised Project has fewer residential units than the original Project, requiring less water supply. The Revised Project will add to the cumulative demand for overall water supplies, and contribute to projected dry year water shortages. Therefore, the Revised Project will be required to include water conservation strategies that will 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 may be implemented in the future. (**Less than Significant**)

Wastewater

The Draft EIR concluded that the original Project would not exceed the wastewater treatment requirements of the applicable Regional Water Quality Control Board, and would not necessitate construction of new or expanded wastewater treatment facilities. The Draft EIR also concluded the original Project would not 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. The Revised Project has fewer residential units than the original Project, requiring less wastewater treatment and disposal. (**Less than Significant**)

Storm Drainage Facilities

Like the original Project, the Revised 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. Development of the Revised Project, like the original Project, would result in an increase in impervious surface and an increase in the volume of stormwater runoff leaving the site. However, the site is located immediately adjacent to the Petaluma River and stormwater runoff from the site would not enter the City of Petaluma's stormdrain system. Rather, stormwater would be collected within an on-site storm drainage system and directed to outlets in the Petaluma River. Potential environmental impacts related to this discharge were fully analyzed in the Hydrology and Water Quality chapter of the Draft EIR. All storm drainage infrastructure to be developed pursuant to the Revised Project would be required to comply with all provisions of the Petaluma Stormwater Management and Pollution Control Ordinance. As further discussed in the Hydrology and Water Quality chapter of the Draft EIR, these infrastructure systems must incorporate best management practices (BMPs) to limit the volume, rate and potential pollutant load of stormwater runoff. These requirements are incorporated as part of all land use entitlements or building-related permits issued by the City. The City will ensure that all applicable BMPs and post-construction treatment measures are properly installed, and that provisions for long-term maintenance are acceptable to the City prior to issuance of a Certificate of Occupancy. Compliance with the provisions of the Petaluma Stormwater Management and Pollution Control Ordinance would reduce any potential impacts related to storm drainage infrastructure to a level of less than significant. (**Less than Significant**)

Construction of New Utilities

Similar to the original Project, the Revised Project would not result in construction of new water, sewer or stormdrain facilities or the expansion of such facilities, in a manner that would cause significant environmental effects. The Revised Project would include new, on-site utility infrastructure to serve its new residents. Each of these on-site utilities is an integral part of the Revised Project, and fully evaluated in the Draft EIR. As concluded in the Draft EIR, construction of utility systems for the Revised Project would not generate environmental impacts greater than, or in addition to the impacts assumed under the original Project. (**Less than Significant**)

Solid Waste

Similar to the original Project, the Revised Project will be served by a landfill with sufficient permitted capacity to accommodate the revised Project's solid waste disposal needs. The Revised Project has fewer residential units than the original Project, generating less waste that will require disposal. (**Less than Significant**)

Energy

Wasteful, Inefficient or Unnecessary Consumption of Energy

Similar to the original Project, construction and operation of the Revised Project would increase the consumption of energy, but would not result in wasteful, inefficient or unnecessary consumption of energy. (**Less than Significant**)

Other Less-than-Significant Impacts

The Draft EIR presented a list of environmental topics that were briefly assessed for the original Project and were determined not to be significant. These topics included agricultural resources, hazards (as related to airport hazards and wildland fires), mineral resources, population and housing, and public services including recreation. The Revised Project does not raise any new environmental concerns pertaining to these topics than were addressed in the Draft EIR, and impacts pertaining to these issues would remain less than significant. (**Less than Significant**)

4

Master Response to Frequent Comments on the Draft EIR

Introduction

This Chapter of the Response to Comments document contains master responses to comments on the Draft EIR to those issues that were frequently raised in comment letters and at oral comments at public hearings. These frequently raised issues include:

- The original Project's proposed Shasta Avenue Extension and at-grade rail crossing
- General concerns about increased traffic levels
- Accuracy and applicability of traffic counts as used in the Draft EIR to establish baseline (or existing) conditions
- Accuracy of the trip generation rates assumed for the Project in the Draft EIR
- Accuracy of the trip distribution patterns assumed in the EIR, particularly as to vehicle trips on Jess Avenue
- Concerns about increased traffic on Graylawn Avenue and Jess Avenue
- Concerns about flooding and the potential for the Project to exacerbate flood conditions
- Concerns about stormwater runoff, both volume (potentially affecting downstream flooding) and water quality
- Implications of increased sedimentation of the Petaluma River and whether current hydrology modeling accounts for this condition
- Loss of wetlands and riparian habitat

Each of the Master Responses that follow address these concerns in the context of how this information was presented in the Draft EIR, and where appropriate draws distinctions or similarities between the original Project as analyzed in the Draft EIR and the now proposed Revised Project.

Master Response - Shasta Avenue Extension and At-Grade Rail Crossing

The City has received numerous comments about the original Project's proposal to construct an extension of Shasta Avenue from North Petaluma Boulevard westerly across the SMART rail tracks and connecting to the project site. Comments have expressed both opposition and support for this component of the original Project. The following Master Response responds to each of these perspectives about the original Project's proposed Shasta Avenue extension, and clarifies that the Revised Project no longer proposes this roadway improvement.

Original Project

Benefits of Shasta Extension (at-grade crossing over SMART corridor)

The original Project provided access to and from the site via two routes - existing Graylawn Avenue, as well as an EVA at Bernice Court, and a Shasta Avenue extension from Petaluma Boulevard North to Graylawn. With these two primary access points, future trips to and from the site would have been distributed over both routes such that not all traffic would load onto one street. Traffic modeling conducted for the Draft EIR indicated that approximately two-thirds of the traffic generated by new development at the site would use the Shasta Extension to Petaluma Boulevard, and one-third of the trips would use Graylawn Avenue to Payran. From these points, trips would then be distributed throughout the City's street system and to the freeway. Based on this trip distribution, the Draft EIR found that Graylawn Avenue would have experienced an increase of approximately 45 AM peak hour trips, 52 PM peak hour trips and approximately 676 average daily vehicle trips (ADTs).

Based on roadway counts collected in November 2015, Graylawn Avenue carried approximately 954 ADTs. The addition of trips generated by the original Project would have resulted in approximately 1,630 ADTs using Graylawn Avenue (presumed to be 1/3 of all trips). The Draft EIR concluded that the original Project's vehicle trips assigned to Graylawn Avenue could have been accommodated on Graylawn without exceeding the local Residential Road Street Standards of the City of Petaluma (2,000 ADTs) and the Project would not have caused this standard to be exceeded.

The Draft EIR also presented a different scenario whereby the Shasta Avenue Extension would not have been constructed and all traffic generated by the original Project would use Graylawn Avenue only. If all 1,808 ADTs pursuant the original Project were added to existing ADTs on Graylawn, the result (2,762 ADTs) would have exceeded the local Residential Road Street Standard of the City of Petaluma. As noted in the Draft EIR, these City roadway design standards as defined in the Petaluma General Plan 2025 Mobility Report are not CEQA thresholds, and the Draft EIR did not use these standards to identify any CEQA-related environmental impacts. The Draft EIR did include a CEQA-threshold level of service analysis for the intersection of Graylawn Avenue/Payran under this single access scenario. That analysis concluded that this intersection, which currently operates at LOS B during both peak hours, would operate at acceptable LOS C during both peak hours if all traffic generated by the original Project were to be added at this intersection.

Environmental Consequences of the Shasta Extension

As noted in the Draft EIR (page 3-29), City staff had several concerns about the feasibility of the original Project. One of staff's main concerns was that the extension of Shasta Avenue as an at-grade crossing of the Sonoma Marin Area Rail Transit (SMART) tracks would need separate approval by the California Public Utilities Commission (CPUC) and CPUC staff had clearly indicated in several early communications with the City that they would oppose this at-grade crossing. City agreed to conduct the environmental review of the original Project as proposed (i.e., with the at-grade crossing), noting CPUC's jurisdiction for the rail crossing and its expressed opposition.

Based on the analysis presented in the Draft EIR, the original Project's proposed Shasta Avenue extension was found to result in several significant and unavoidable environmental impacts as summarized below.

Safety Hazard

The original Project would have resulted in increased hazards associated with the at-grade rail crossing including traffic, bicycle and pedestrian crossings at an unsafe location, and increased public presence along the rail racks. Construction of a grade-separated structure (per Draft EIR Mitigation Measure Haz-6) was considered potentially infeasible, and this impact was considered a significant and unavoidable impact of the original Project.

Noise from Train-warning Horns

The original Project would have exposed existing and new residents to reasonably foreseeable and significant noise levels associated with warning horns that would be needed at the Shasta crossing. Noise levels from these horns would have resulted in a substantial increase in ambient noise levels in the vicinity. Neither the applicant nor the City of Petaluma could ensure that a Quiet Zone could be established at this crossing (per Draft EIR Mitigation Measure Noise-3). Even with establishment of a Quiet Zone, noise from SMART train horn blowing on an as needed basis, from freight train horn blowing, as well as from potential additional wayside horns at the Shasta crossing would adversely affect both new and existing residences. This was considered a significant and unavoidable impact of the original Project.

Roadway Design Hazard

The original Project was found to result in a substantial increase in roadway hazards and hazards for emergency vehicles accessing the site across the at-grade rail crossing. Roadway design hazards could not be fully avoided with implementation of all at-grade safety measures recommended in the Draft EIR (Mitigation Measure Trans-7B), and the City of Petaluma would not have sole jurisdiction to implement these measures. Mitigation was considered potentially infeasible and this was considered a significant and unavoidable impact of the original Project.

Inconsistency with Bicycle and Pedestrian System Standards

The original Project would have created an inconsistency with adopted City of Petaluma bicycle and pedestrian system plans, guidelines, policies and standards related to the pedestrian and bicycle at-grade crossing. Even with all applicable and appropriate pedestrian and bicycle safety measures recommended in the Draft EIR (Mitigation Measure Trans-9B), the City of Petaluma would not have sole jurisdiction to implement these measures. This was considered a significant and unavoidable impact of the original Project.

Revised Project

In response to the environmental issues associated with the Shasta Avenue's at-grade rail crossing and concerns voiced by the public, the City Planning Commission, the City Council and the CPUC, the Project applicant has proposed a Revised Project that no longer includes a Shasta Avenue extension or an at-grade rail crossing. In modifying the original Project, the Revised Project avoids the significant environmental impacts related to safety hazards, noise from train-warning horns, roadway design hazards and inconsistencies with bicycle and pedestrian system standards. Mitigation measures as recommended in the Draft EIR to address impacts relating to the Shasta Avenue at-graded rail crossing are no longer necessary.

However, the Revised Project now provides primary access to and from the site via Graylawn Avenue only. The previously identified EVA at Bernice Court continues to provide limited secondary access for emergency vehicles and personnel. All trips to and from the site would load onto Graylawn Avenue, with a minor split of traffic at Jess Avenue (see Master Response to Comments on Trip Distribution). Even though the Revised Project is reduced in size, and the total number of vehicle trips is commensurately reduced, the Revised Project will increase traffic on Graylawn by an amount that is greater than traffic assumed under the original Project and presented in the Draft EIR (see Master Response to Comments on Increased Daily Traffic on Graylawn Avenue and Jess Avenue). It should be noted that the Draft EIR (pages 14-67 through 14-70) also included an analysis of traffic impacts without the Shasta Extension at grade crossing, which assumed that all trips would use Graylawn Avenue as the primary ingress and egress (see Master Responses to Comments regarding the Accuracy of Trip Distribution Patterns).

Master Responses Related to Traffic

Vehicle Miles Travelled (VMT)

Pursuant to Senate Bill 743, the Governor's Office of Planning and Research (OPR) released proposed changes to the State's CEQA Guidelines in 2016 that will amend the way transportation impacts are analyzed pursuant to CEQA. Specifically, SB 743 (Public Resources Code Section 21099) required OPR to amend CEQA Guidelines to provide an alternative to Level of Service (LOS) methodology for evaluating transportation impacts. The changes to CEQA Guidelines result in significant changes in how transportation impacts are evaluated pursuant to CEQA. These analytic changes also result in significant changes in how mitigation is imposed through the CEQA process, potentially including measures that seek to reduce or avoid impacts related to vehicle mile travelled (VMT) and/or trip generation, rather than improvements to increase levels of service (LOS) to accommodate increased traffic demands.

SB 743 Section 15064.3(c) provides that, "a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide." The City of Petaluma has yet to determine how these changes to state CEQA Guidelines will be implemented within the City, but the Petaluma City Council's Goals and Priorities Report for 2017/2018, pursuant to their review and amendments to the Petaluma General Plan 2025, include updating CEQA traffic thresholds to transition from LOS to VMT, in keeping with anticipated state CEQA Guidelines. While continuing to make progress on this goal, the City is working towards adopting local thresholds and methodology for VMT analysis consistent with provisions of SB 743 in advance of its mandated date. Since the provisions of SB 743 pertaining to VMT analysis is not mandated until July 1, 2020, a VMT analysis of the Project is not required or included as part of this EIR.

General Traffic Impacts

The City has received numerous comments from member of the public describing their perceptions of traffic, including congestions and delay along the City street system. Based on these perceptions, comments have suggested the traffic analysis prepared for the Draft EIR must be incorrect and does not present a realistic understanding of existing traffic conditions. The purpose of this Master Response is not to refute those perceptions, but to explain how the Draft EIR has relied on objective, quantifiable data and similarly quantifiable thresholds established by the City to report on traffic conditions in the City.

Methodology

As described on page 14-7 of the Draft EIR, traffic conditions at intersections and along roadway segments were assessed using a grading system called level of service (LOS). This qualitative system "grades" traffic flow conditions through an intersection or along a road segment using factors such as speed, travel time, delay and freedom to maneuver. Six "grades" or levels of operation are used, ranging from LOS A (representing the best operating conditions) to LOS F (representing the worst operating conditions). When operating conditions are at design capacity for an intersection or roadway, operations are graded as being at LOS E conditions. When traffic volumes exceed design capacity, stop-and-go traffic conditions typically result and operations are considered LOS F. LOS calculations for intersections are dependent on the type of intersection control device (i.e., a traffic signal, a stop signs or a roundabout).

The methodology used in this LOS grading system is defined in the *Highway Capacity Manual* (HCM) published by the Transportation Research Board,[1] and is consistent with the *City of Petaluma's Guide for the Preparation of Traffic Impact Studies*.[2]

- For signalized intersections, the methodology determines the LOS grade based on the average "control delay" experienced at the intersection (in seconds per vehicle). Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration. Average control delay for signalized intersections is calculated using Synchro analysis software and correlated to LOS designations.
- For unsignalized (stop controlled) intersections, the methodology also determines the LOS grade based on the average control delay. At two-way or side street stop-controlled intersections, the control delay is calculated for each movement and the LOS is reported based on the single controlled movement with the highest average delay. For single-lane intersections, the control delay is computed as the average of all movements in that lane.
- For freeway segments on U.S. 101, the methodology uses a ratio of volume to capacity (V/C). Ideal freeway capacity is 2,400 vehicles per hour per lane. Segments of U.S. 101 through Petaluma have some features that reduce these ideal capacity flow rates (i.e., heavy vehicles such as trucks and buses, short merging distances for on-ramps, and short interchange spacing). Under these conditions, the capacity is reduced to 2,200 vehicles per hour per lane.

Thresholds

The City of Petaluma has adopted a level of service standard at LOS D. This standard is derived from Petaluma General Plan 2025 policy, as indicated below:

> **Policy 5-P-10**: Maintain an intersection level of service (LOS) standard for motor vehicle circulation that ensures efficient traffic flow and supports multi-modal mobility goals. LOS should be maintained at Level D or better for motor vehicles due to traffic from any development project.

As indicated in Table 14-1 of the Draft EIR, LOS D at a signalized intersection is generally described as conditions where drivers may wait through one red-light indication and traffic queues may develop, but queues dissipate rapidly without excessive delays. The average control delay is between 35 and 55 seconds per vehicle. As indicated in Table 14-2 of the Draft EIR, LOS D at an unsignalized intersection can be generally described as operations with an average control delay of 25 to 35 seconds per vehicle.

Throughout the Draft EIR, LOS D or better is described as being "acceptable". As used in this context, the term "acceptable" is specifically defined as satisfying the General Plan policy's standard LOS D for efficient traffic flow. Any individual's subjective or qualitative perception of "acceptable" traffic conditions may or may not align with the established LOS D standard.

Existing Traffic Conditions and Project Impacts

As demonstrated in Table 14-3 of the Draft EIR, all of the 14 intersections studied in the Draft EIR operate at acceptable levels based on City LOS standards. The intersections of Petaluma Boulevard/Corona Road, Petaluma Boulevard/Washington Street and the East Washington Street/US 101 southbound ramps operate at the City's threshold of LOS D, and all other study intersections currently operate at LOS C or better.

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[1] The Transportation research Board (or TRB) is a non-profit organization and a program unit of the National Academy of Sciences, Engineering and Medicine. TRB provides independent, objective and interdisciplinary research and provides professional advice through its policy studies, including the Highway Capacity Manual.

[2] Guide for the Preparation of Traffic Impact Studies, City of Petaluma, 2007.

The analysis presented in the Draft EIR concluded that all study area intersections would continue to operate at acceptable levels of service with the addition of project-generated traffic. All of the signalized intersections that currently operate at acceptable LOS D or better would continue to operate at LOS D or better if traffic generated by the original Project was added. Similarly, all of the unsignalized intersections that currently operate at acceptable LOS D or better would continue to operate at acceptable LOS D or better if traffic generated by the original Project was added, and the traffic at these unsignalized intersections would not satisfy Caltrans' signal warrant criteria under peak-hour volumes for installation of a new traffic signal.

The Revised Project would generate approximately 45 fewer AM peak hour trips and 58 fewer PM peak hour trips than would the original Project. With less trips generated, the Revised Project would contribute less overall traffic to the roadway network, would have less substantial impacts at intersections throughout the City's roadway network, and would not result in any new or more severe impacts related to intersection level of service than was presented in the Draft EIR.

Accuracy and Applicability of Traffic Counts

The Project's development application process has been under review for more than ten years. In that time, the Bay Area's regional traffic congestion has increased as the economy has boomed and housing options close to jobs have not kept pace. The traffic counts used in the Draft EIR were collected in 2007 and 2008, and again in 2015 when the traffic analysis for the Project was conducted. Members of the public and City decision makers questioned whether the traffic analysis presented in the Draft EIR accurately represented current traffic conditions and/or accurately assessed traffic impacts if the existing conditions were not accurate.

Traffic Counts as Presented in the Draft EIR

As indicated in the Draft EIR (beginning at page 14-9), original peak-period traffic counts were collected at study area intersections in May and October of 2007, and in January 2008. Traffic counts were again collected in November 2015 at 13 of the 14 study intersections. The November 2015 traffic counts collected data for intersection turning movements at each intersection, and were taken during typical weekdays while school was in session. Unusual circumstances were not observed during the traffic count process that would affect traffic conditions. The traffic counts were conducted during typical peak hours for vehicle traffic, between the hours of 7:00 to 9:00 AM, and between 4:00 to 6:00 PM. The peak hour traffic counts and lane configurations were summarized on Draft EIR Figures 14-2A and -2B and documented in Draft EIR Appendix 14A.

The Draft EIR also presented a comparison of traffic volumes as counted in 2007/2008 to the traffic volumes counted in 2015, and a comparison of the resulting intersection LOS at each study intersection (Appendix 14C of the Draft EIR). The 2007/2008 intersection volumes and resulting intersection LOS conditions were generally found to be higher (i.e., more congested) than the more recent 2015 intersection volumes. While certain transportation network and land use changes had occurred since the 2007/2008 data was collected, these changes were not anticipated to change the findings of the traffic study based on the assessment presented in Appendix 14C. Therefore, the 2007/2008 intersection volumes were relied on in the Draft EIR traffic analysis because they provided the more conservative (or worst-case) basis for analysis of Project impacts. One exception was the intersection of East Washington Street/Lakeville Street. No counts were taken at this location in 2007/2008 so a separate count at this intersection conducted in September 2015 was used to analyze impacts at this intersection. These traffic conditions established the existing baseline against which the original Project was evaluated in the Draft EIR.

New Traffic Counts (2019)

New traffic volume and traffic speed data was collected near the site in January and February of 2019 to address the comments and questions about traffic levels. The new traffic count locations are shown on **Figure 4-1**. These intersections were selected due to their proximity to the site. They would experience the

greatest concentration of trips and the greatest potential for a significant impact if traffic existing traffic volumes have changed substantially.

The traffic counts were collected on typical weekdays while school was in session, and when the weather was sunny and without rain. Pneumatic tube counting machines were deployed at three locations to record average daily traffic (ADT) volumes along Graylawn Avenue and Jess Avenue, and an additional machine was deployed on Graylawn Avenue north of Cordelia Drive to record vehicle speed. The counting machines were active for a continuous 72-hour period starting Tuesday January 22, 2019 and ending Thursday January 24, 2019. For technical reasons the traffic counting equipment was placed just north of several houses on Graylawn and Jess Avenues and did not capture counts of vehicle trips from these homes to Payran Avenue. These non-counted homes are estimated to generate approximately 20 to 30 total vehicle trips per day, based on standard Institute of Transportation Engineers' Trip Generation 10th Edition trip generation rates. Trips form these non-counted homes were added manually for LOS calculations (this topic is also briefly discussed in the qualitative discussion of the results of these analyses in the Master Response to Traffic on Graylawn Avenue and Jess Avenue).

Counting cameras were also deployed on Wednesday, January 23, 2019 to capture turning movements made by motorists, bicyclists and pedestrians during typical weekday morning (7 to 9 AM) and the evening peak commute period (4 to 6 PM). These camera-captured turning movement counts were collected at the following four intersections:

- Payran Street/Petaluma Boulevard (Draft EIR intersection #6)
- Payran Street/East Washington Street (Draft EIR intersection #9)
- Payran Street/Graylawn Avenue (Draft EIR intersection #12), and
- Graylawn Avenue/Jess Avenue (new intersection #20)

The first three of these intersections were studied in the Draft EIR. The fourth intersection at Graylawn Avenue/Jess Avenue was not evaluated in the Draft EIR, but was selected to aid in evaluation of potential traffic impacts on Jess Avenue.

Supplemental peak period and 72-hour traffic counts were conducted again in March 2019 at each intersection to confirm that the January counts, which occurred Tuesday through Thursday during the one week without rain during the initial data collection period, were not influenced by the Martin Luther King Jr. holiday (Monday January 21st). The March counts are not substantially different from the January counts (see **Appendix C** to this document), confirming that the January counts adequately represent 2019 conditions.

Traffic Volume Comparison

Each of the new 2019 traffic turning movement counts collected at the three intersections nearest to the site was compared to traffic counts presented in the Draft EIR to determine whether traffic volumes have significantly changed since 2015. The turning movement counts at these three local intersection are summarized in **Table 4-1**.

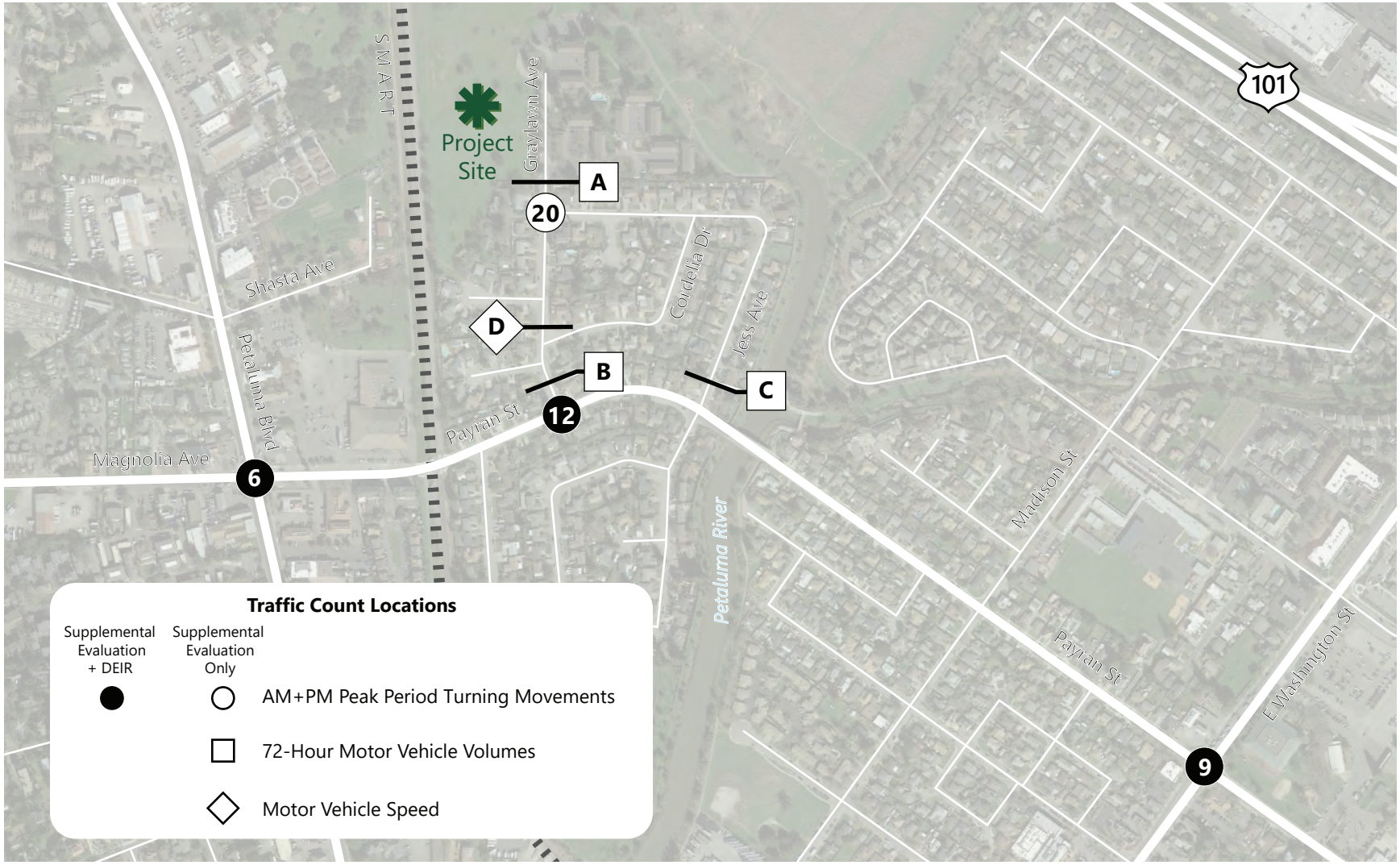


Figure 4-1
May 2019 Traffic Count Locations

Source: Fehr & Peers, May 2019

Table 4-1: Traffic Volume Comparison (Vehicles) at Study Intersections

Study Intersection	DEIR Existing Volumes		2019 Counts		Change			
					Count		Percent	
	AM	PM	AM	PM	AM	PM	AM	PM
6: Petaluma Blvd / Payran St.	2,616	2,961	2,971	2,717	355	-244	14%	-8%
9: Payran St. / E. Washington St.	2,289	3,007	2,344	2,515	55	-492	2%	-16%
12: Payran St. / Graylawn Ave.	586	908	897	817	311	-91	53%	-10%
TOTAL	**5,491**	**6,876**	**6,212**	**6,049**	**721**	**- 827**	**13%**	**-12%**

Source: Fehr & Peers, March 2019

As indicated in Table 4-1, traffic volumes at these three intersections have decreased by an average of approximately 12 percent during the PM peak hour, but have increased by an average of approximately 13 percent during the AM peak hour as compared to traffic volumes presented in the Draft EIR. Traffic data presented in the Draft EIR indicated that these intersections were more congested during the PM peak hour than during the AM peak hour, and the 2019 traffic counts now indicate that traffic congestion during the AM peak hour has increased and is now similar to the PM peak hour. One possible reason that traffic volumes adjacent to the site have decreased in the PM peak hour may be due to "peak period spreading", where the actual traffic volumes during the peak hour do not substantially change but the length of the peak period has increased. The locations where traffic volumes have increased during the AM peak hour are discussed further below.

Payran Street/Graylawn Avenue

At the Payran Street/Graylawn Avenue intersection, traffic volumes during the AM peak period are shown to have substantially increased by approximately 300 vehicles (or by 53 percent). The Draft EIR (relying on the lower traffic volumes during the AM peak hour) indicated that with this lower level of traffic, this intersection operated at LOS B in the weekday AM peak hour, this intersection had excess capacity and that drivers experienced relatively low levels of delay. The higher 2019 traffic volumes during the AM peak hour are similar to traffic volumes presented in the Draft EIR for the PM peak hour. At these similar traffic volumes, the intersection was still shown to operate at LOS B. Therefore, although traffic volumes at this intersection have increased during the AM over the traffic volumes as presented in the Draft EIR, the increase in traffic volumes has not significantly affected intersection operations, which remain at LOS B using data from the 2019 traffic counts.

Under each of the future scenarios presented in the Draft EIR (Pipeline and Cumulative), traffic operations at this intersection were not shown to exceed LOS C during the AM or PM peak hours. This indicates that the change in traffic volumes in the AM peak hour (which are now substantially similar to the PM peak hour) would not substantially affect traffic operations and this intersection would continue to operate at acceptable LOS conditions.

Petaluma Boulevard/Payran Street

The Petaluma Boulevard/Payran Street intersection shows the largest absolute increase in traffic volumes during the AM peak hour when comparing 2015 counts (as presented in the Draft EIR) to current 2019 traffic counts. Based on 2015 traffic counts, this intersection operated at LOS C in the weekday AM peak hour. As

shown in Appendix C, nearly all of the increase in traffic volumes during the AM peak hour occurred in the northbound and southbound through movements, which were not congested and had excess capacity based on 2015 data. The higher 2019 traffic volumes during the AM peak hour at this intersection are similar to traffic volumes presented in the Draft EIR for the PM peak hour, which showed this intersection to operate at LOS C. Therefore, although traffic volumes at this intersection have increased over the traffic volumes as presented in the Draft EIR, the increase in traffic volumes has not significantly affected intersection operations, which remain at acceptable LOS conditions.

Under each of the future scenarios presented in the Draft EIR (Pipeline and Cumulative), traffic operations at this intersection do not exceed LOS C during the AM or PM peak hours. This indicates that the change in traffic volumes in the AM peak hour would not substantially affect traffic operations, and this intersection would continue to operate at acceptable LOS conditions. The effects of existing traffic volume changes on vehicle delay would be minimal, and the traffic impacts at this intersection as presented in the Draft EIR adequately reflects 2019 baseline conditions.

Payran Street/ East Washington Street

The increase in traffic volumes at the Payran Street/East Washington Street intersection shows the least increase in traffic volumes during the AM peak hour when compared to 2015 counts, with a difference of only a 2 percent increase. This minor increase in background traffic would not change the LOS analysis for this intersection as presented in the Draft EIR.

Accuracy of the Trip Generation Rates

City Council and the public questioned whether data used to generate the Project's trip generation forecast was suited to the Project's setting. The Draft EIR estimated project-generated vehicle trips for the original Project based on trip rates obtained from the Institute of Transportation Engineers' (ITE) *Trip Generation 9th Edition Manual*, which contains data based on research conducted throughout the United States over the past few decades for various land use categories, predominantly in suburban settings with limited alternatives to auto travel. These trip rates tend to overestimate vehicle travel in compact urban areas with a mix of land uses, but are generally applicable to suburban settings such as the project site.

The number of vehicle trips generated by the existing Oak Creek Apartments (a low-rise apartment building neighboring the Project site) was used to test whether the ITE trip generation rates provide an accurate estimate of expected local trip generation characteristics. Parking on Graylawn Avenue north of Jess Avenue is restricted to residents and visitors of the Oak Creek Apartments. Therefore, vehicle trips on Graylawn Avenue north of Jess Avenue are most likely associated with the Oak Creek Apartments. The actual number of vehicle trips on Graylawn Avenue north of Jess (per the 2019 traffic counts), divided by the number of occupied units at the Oak Creek Apartments, represents the trip generation rate for this apartment complex. This local trip generation rate can also be used to estimate the number of vehicle trips that the Revised Project would generate. As shown on **Table 4-2**, the actual trip generation rates from the existing Oak Creek Apartments is 6.88 daily tips per unit, 0.58 AM peak hour trips per unit, and 0.68 PM peak hour trips per unit.

Table 4-2: Oak Creek Apartments Trip Rates

Occupied Dwelling Units *(a)*	Daily Volume				AM Peak Hour				PM Peak Hour			
	In	Out	Total *(b)*	Rate *(b/a)*	In	Out	Total *(b)*	Rate *(b/a)*	In	Out	Total *(b)*	Rate *(b/a)*
76	266	257	523	6.88	8	36	44	0.58	31	21	52	0.68

Source: Fehr& Peers, 2019

These trip rates as calculated for the existing Oak Creek Apartment complex can be compared against estimated trip rates from the 9th Edition of the ITE Manual to assess the relative accuracy of the trip generation rates applied to the original Project and used in the Draft EIR. This comparison also helps to determine trip rates that should be attributed to the Revised Project. The comparison of trip generation rates from the 9th Edition of the ITE Manual (as used in the Draft EIR) to trip generation rates as calculated from the Oak Creek Apartments is shown in **Table 4-3.** Table 4-3 also compares ITE trip generation rates of the recently published the 10th edition of ITE's Trip Generation Manual.

Table 4-3: Project and Revised Project Trip Generation Comparison

Data Source		Daily		AM Peak Hour				PM Peak Hour			
Reference	Size	Trip Rate[1]	Trips	Trip Rate	In	Out	Total	Trip Rate	In	Out	Total
DEIR Project[2]	278 DU	6.5	1,808	0.50	28	112	140	0.61	111	60	171
ITE 9th Ed.	205 DU	6.5	1,366	0.51	21	84	105	0.62	85	46	131
ITE 10th Ed.	**205 DU**	**7.32**	**1,591**	**0.46**	**22**	**73**	**95**	**0.56**	**71**	**42**	**113**
Local Rate[3]	205 DU	6.88	1,410	0.58	21	97	119	0.68	84	56	140
Net Change (original Project vs. Revised Project)[4]	-73 DU	--	-217	--	-6	-39	-45	--	-40	-18	-58

Notes:

1. ITE-based trip rates based on data for fitted curve equations published in the respective version of ITE's *Trip Generation*.
2. Original Proposed Project was 278 units, However the DEIR analysis used trip generation for a 312-unit project to be consistent with previous analyses of the Project and to present a more conservative (worst case) analysis of the Project.
3. From Table 4-2, above
4. ITE *Trip Generation 10th ed.* trip rate was selected to forecast the Revised Project's trip generation because it results in the highest daily trip volume and the most conservative value for the local street capacity analysis.

As demonstrated in Table 4-3, the local trip generation rates from the Oak Creek Apartments do not differ substantially from the trip generation rates used in the Draft EIR as derived from the ITE Trip Generation 9th Edition. The Oak Creek Apartment trip rate of 6.88 daily trips per unit is 0.3 trips per day per unit greater than the ITE 9th Edition rate of 6.5 daily trips per unit (or approximately a 6 percent increase). The trip rate from

the ITE 10th Edition (which is the most recent nationally available data) shows the highest daily trip rate per unit (at 7.32 trips per day per unit), while the Oak Creek Apartment trip rate is the highest during the AM and PM peak hours.

Under either of the three data sources, the Revised Project (at 205 units) would generate fewer vehicle trips than would the original Project as analyzed in the Draft EIR. For purposes of analyzing effects related to the Revised Project's daily traffic on the surrounding roadways, the ITE 10th Edition trip rates were selected as representing the most conservative (i.e., highest trip rate) on a daily basis. Under either the ITE 9th Edition, ITE 10th Edition, or local trip rate, the Revised Project would generate less peak hour traffic and would not create more substantial peak hour intersection LOS impacts as compared to the original Project. As analyzed in the Draft EIR, even at the higher peak hour trips, the original Project was not found to result in significant intersection LOS impacts.

Accuracy of Trip Distribution Patterns

City Council and members of the public asked how much Project-generated traffic would use Jess Avenue and whether this traffic would create a significant impact to traffic operations.

Trips associated with the original Project were assigned to roadways and intersections based on trip distribution assumptions embedded in the traffic model. The expected distribution of trips onto the adjacent roadway network was determined based on evaluation of existing traffic patterns, data included in the City's travel demand forecasting model, and complimentary land uses. For the original Project, two primary points of access and egress were assumed: one at Graylawn Avenue and one at the Shasta Extension over the railroad tracks. The trip distribution assignments for the original Project indicated that approximately two-thirds of the original Project's trips would use the Shasta Extension and one-third would use Graylawn Avenue.

The Draft EIR also presented a scenario whereby the Shasta Avenue Extension would not be constructed. This scenario assumed that all traffic generated by the original Project would instead use Graylawn Avenue, and no trips were assigned to Jess Avenue.

Graylawn Avenue and Jess Avenue are the only two local streets that connect the site to Payran Street, and Graylawn is the more direct route. Drivers generally select the fastest and most direct routes to reach their destinations, but unique circumstances could affect route choice. To test this possibility, turning movement counts were conducted during weekday morning and evening peak-periods at the intersection of Graylawn Avenue/Jess Avenue to determine how existing drivers use each street. Given the adjacency of the Oak Creek Apartments to the project site, existing travel patterns are presumed to be similar to future project-related traffic. As shown in **Table 4-4**, 18 percent of existing drivers arriving at or leaving the Oak Creek Apartments during the AM peak hour used Jess Avenue, and 10 percent of existing drivers arriving at or leaving the Oak Creek Apartments during the PM peak hour used Jess Avenue during the data collection period. This traffic pattern matches observed conditions and daily vehicle counts on each street, which shows that traffic volumes are much lower on Jess Avenue as compared to Graylawn Avenue.

Table 4-4: Oak Creek Apartments Trip Distribution

Street	AM Peak Hour				PM Peak Hour				Average AM + PM Peak Hour Percentage
	In	Out	Total	Percentage	In	Out	Total	Percentage	
Graylawn Ave.	7	29	36	82%	29	18	47	90%	86%
Jess Ave.	1	7	8	18%	2	3	5	10%	14%
TOTAL			**44**				**52**		

Source: Fehr & Peers, 2019

Applying the same distribution of trips by percentage to the Revised Project and relying on the local trip rate as calculated form the Oak Creek Apartments, approximately 21 new vehicle trips would use Jess Avenue during the AM peak hour, and 14 new vehicle trips would use Jess Avenue during the PM peak hour. As many as 98 new vehicle trips would use Graylawn Avenue during the AM peak hour, and 126 new vehicle trips would use Graylawn Avenue during the PM peak hour (see **Table 4-5**). This level of increased traffic on Jess Avenue and Graylawn Avenue would not result in any new or substantially different operational traffic impacts at local intersections during peak hours than were disclosed in the Draft EIR.

Table 4-5: Revised Project Peak Period Trip Assignment to Jess and Graylawn Avenue

Trip Rate:	AM Peak Hour				PM Peak Hour			
	Total Vehicle Trips	Percent using Jess	Vehicles using Jess	Vehicles using Graylawn	Total Vehicle Trips	Percent using Jess	Vehicles using Jess	Vehicles using Graylawn
10th Edition	95	18%	17	78	113	10%	11	102
Local Rate	119		21	98	140		14	126

Source: Fehr & Peers, 2019

Increased Daily Traffic on Graylawn Avenue and Jess Avenue

The City has received numerous comments about the amount of additional traffic that would be added to Graylawn Avenue and Jess Avenue, and that this additional traffic would result in adverse safety and quality of life implications. The following Master Response responds to these concerns and clarifies the difference between the types of traffic impacts considered significant under CEQA, versus traffic impacts that may adversely affect the livability on local residential streets.

As noted in the Draft EIR, the City's roadway design standards are not CEQA thresholds, and the Draft EIR did not use these standards to identify any CEQA-related environmental impacts. Rather, these design standards provide a relative means of measuring the qualitative effects of increased vehicle traffic on the street environment and adjacent residential uses. According to the Petaluma General Plan 2025 Mobility Report, Graylawn Avenue is identified as a local residential road. Pursuant to the City of Petaluma Department of Engineering's *Street Design and Construction Standards & Specifications*, local residential roadways are intended to carry up to a maximum average daily traffic (ADT) of 2,000 trips, serving up to 200 dwelling

units.[3] Exceeding this design standard is not considered a significant environmental impact, but does indicate that the City and the project applicant should consider implementation of traffic calming measures to improve and enhance the livability of the adjacent neighborhood.

The applicant has voluntarily agreed to incorporate traffic calming measures as part of the Revised Project, and a conceptual Traffic Calming Plan has been prepared (see **Appendix A**). The Traffic Calming Plan outlines several traffic calming concepts that could be pursued in a manner consistent with the City's goals for traffic calming in residential neighborhoods, as outlined in the City's 2025 General Plan. Traffic calming concepts included in the conceptual Traffic Calming Plan include:

- Speed feedback signs that have dynamic digital displays which show the speed of the approaching motorist
- Additional signage and/or pavement markings to warn or inform people of roadway conditions, including speed limits
- Median islands located in the center of the roadway to narrow travel lanes, prevent wide turns and slow vehicle speeds
- Curb extensions that narrow the travel way at intersections or mid-block locations to reduce vehicle speeds, enhance pedestrian connectivity, safety and comfort, and create additional space for landscaping and pedestrian amenities
- Intersection curb extensions at Jess and Graylawn Avenue intersections at Payran Street, to enhance pedestrian connectivity along Payran Street
- A traffic circle at the intersection of Graylawn Avenue and Jess Avenue to control turning and through movement vehicle speeds
- Street tree planting implemented corridor-wide, where right-of-way allows

All scenarios of the Traffic Calming Plan include traffic-calming elements for both Graylawn and Jess Avenues, to avoid creating a situation where a traffic-calming program on Graylawn Avenue causes drivers to divert onto Jess Avenue. The strategies presented within the Traffic Calming Plan are intended to be conceptual in nature and are not intended for immediate implementation without a community engagement process followed by detailed engineering design. The applicant shall coordinate with City Public Works staff on the preferred Traffic Calming approach and design (anticipated to be similar in nature to Concept 3 as shown in the conceptual Traffic Calming Plan of **Appendix A**), and the preferred Traffic Calming Plan shall be shown on the plan set for SPAR review. As part of the SPAR process, the Planning Commission will review and consider approval of a final Traffic Calming Plan, specifically determining which traffic calming measures will ultimately be implemented. The Public Improvement Plan set for the Revised Project shall include the final Traffic Calming Plan.

Average Daily Traffic Levels

Table 4-6 summarizes the recent traffic volume data that was collected on Graylawn and Jess Avenue in 2019, and compares this 2019 data to the average traffic volumes for Graylawn Avenue as obtained in 2015.[4] Based on current (2019) traffic counts, the two-way ADT (i.e., total trips on the road, counting trips in both directions) on Graylawn Avenue ranged between 1,112 and 1,161 vehicle trips per day, with a three-day

[3] City of Petaluma Department of Engineering, Street Design and Construction Standards & Specifications, Street Standards Design and Application Guidelines (page 3), May 1999

[4] 2015 counts were documented in the memorandum Graylawn Data Collection Summary and Roadway Capacity Analysis (Fehr & Peers, April 2016 as included in the Appendices to the Draft EIR)

average of 1,142 ADT. The two-way ADT on Jess Avenue ranged between 404 and 441 vehicle trips per day, with a three-day average volume of 419 ADT (all traffic count data are attached as Appendix C).

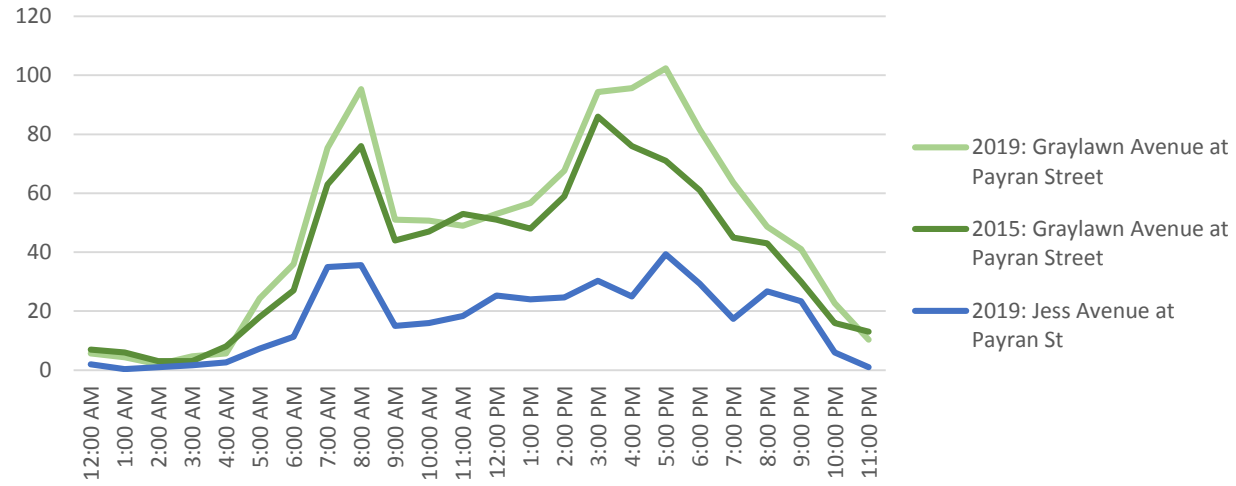
Table 4-6: ADT Count Comparison for Graylawn and Jess Avenues

Count Year	Tuesday	Wednesday	Thursday	Three-Day Average
Graylawn Avenue				
2019	1,152	1,161	1,112	1,142
2015				954
			Net Change:	+ 188
Jess Avenue				
2019	441	404	411	419

Source: Fehr & Peers, 2019

Since 2015, the three-day average traffic volume on Graylawn Avenue has increased by 20%, from 954 vehicles per day in 2015 to 1,142 vehicles per day in 2019. Most of this increase in traffic is generated during the AM and PM peak periods, with the peak traffic conditions occurring over a longer period in the evening, as shown in **Table 4-7**. However, traffic operations during the peak hour have not substantially changed at the intersection of Graylawn Avenue/Payran Street. Therefore, the CEQA-related traffic impact analysis as presented in the Draft EIR remains accurate and adequate.

Table 4-7: Three-Day Average Traffic Volume by Time



With the addition of traffic from the Revised Project, the ADT on both Jess Avenue and on Graylawn Avenue will increase. As shown on **Table 4-8**, daily traffic generated by the Revised Project would cause the City's

local street standard of 2,000 ADT on Graylawn Avenue to be exceeded, but would increase total ADT on Jess Avenue to only approximately one-half of the City's local street standard. This analysis is based on the trip generation data for the Revised Project from Table 4-5 using the higher *Trip Generation 10th Edition* daily trip rates and the trip distribution split from Table 4-6. This conclusion is not fundamentally different from that presented in the Draft EIR, which indicated that with the addition of traffic generated by the original Project (assuming no Shasta Avenue Extension), traffic on Graylawn Avenue would exceed the design standard. Exceeding the design standard is not a significant environmental impact, but does indicate that the City and the project applicant should consider implementation of traffic calming measures to improve and enhance the livability of the adjacent neighborhood. A conceptual plan for traffic calming has been prepared for the Revised Project (see **Appendix A** of this document). Appropriate traffic calming measures will be established by the Planning Commission pursuant to SPAR.

Table 4-8: Traffic Volumes versus Design Standards at Graylawn and Jess Avenues

Scenario	Graylawn Avenue	Jess Avenue
Existing ADT	1,142	419
Revised Project Contribution to ADT	1,368	223[1]
Existing plus Revised Project ADT	2,510	642
Exceed Design Standard of 2,000 ADT?	Yes	No

Notes:
1. 14 percent of daily Project vehicles are estimated to use Jess Avenue based on the average of the AM and PM peak periods presented in Table 4-5.

Traffic Speeds

The maximum speed at which 85 percent of motorists are traveling along a given distance (or the 85th percentile speed) is a standard engineering measurement of traffic speed. Neither Graylawn nor Jess Avenue have a posted speed limit, therefore the prima facie speed limit is 25 miles per hour (MPH). As noted in the 2025 Mobility Report, desired speeds for local residential streets are less than 25 mph.[5] Speeds of 25 mph are used in this analysis as the 85th percentile speed for determining if vehicle speeds exceed the limit and warrant consideration of traffic calming measures.

Data for average vehicle speeds was collected at a mid-block location on Graylawn Avenue (between Payran Street and Jess Avenue), during a 72-hour mid-week period to capture "free-flow" driver speeds, independent from stopping and turning maneuvers at intersections. As shown in **Table 4-9**, the 85th percentile vehicle speeds on Graylawn Avenue exceed the 25-mph threshold as outlined in the 2025 Mobility Report.

[5] City of Petaluma, Petaluma General Plan 2025 (Table 5.2-2 Typical Attributes of Different Street Types), March 2008

Table 4-9: Graylawn Avenue 85th Percentile Vehicle Speed

Location	Northbound	Southbound
Graylawn Ave. between Cordelia Ct. & Bernice Dr.	28.4 mph	29.4 mph
Exceed 25 mph 85th percentile speed?	Yes	Yes

Source: Fehr & Peers, 2019

Although not required as mitigation measure for a CEQA-defined impact on the environment, implementation of traffic calming measures on Graylawn Avenue would help address conflicts with the City's design standard for residential streets. A conceptual Traffic Calming Plan has been prepared for the Revised Project (please see **Appendix A** to this document), to be implemented on Graylawn and Jess Avenue, where traffic volumes are projected to exceed the City design standards for livable streets and where traffic speeds typically exceed 25 mph.

Master Responses Regarding Flooding

The City has received numerous comments expressing concern that the Project will exacerbate existing flooding conditions along reaches of the Petaluma River. The following Master Responses provide information to address the range of flood-related questions and comments on the Draft EIR, as well as information that is not specific to the project or its analysis but rather pertains to the cumulative effects of citywide flood control efforts.

Background

Prior Flood Control Improvements

The Draft EIR (beginning at page 11-2) provides a summary from the City's General Plan that described flooding conditions along the Petaluma River. That summary noted that floods in the Petaluma River Basin normally last 3 to 4 days and typically occur between December and March. Significant flooding events have occurred in Petaluma in 1982, 1983, 1986, 1995, 1996, 1998, 2005 and 2014. The largest flood of record in the City of Petaluma occurred in January 1982, a significant flood event occurred in December 2005 and recent flooding occurred in January of 2017. Several areas in Petaluma have historically experienced significant flooding, including the Payran Street neighborhood adjacent to the project site.

The Draft EIR summarized a number of major efforts initiated by the City to address these flooding problems. Between 1997 and 2008, nearly $40 million in improvements along the Petaluma River Flood Control Project were completed. These improvements included:

- replacement of the Lakeville and Payran Street bridges
- construction of the U-shaped channel and trapezoidal channel between the Lynch Creek confluence to below Lakeville Street
- construction of a constriction weir just upstream of Lynch Creek
- removal and replacement of the mainline railroad bridge at Lakeville Street, construction of the approaches to the mainline railroad bridge, removal of the railroad spur bridge downstream of Lakeville Street and construction of the industry railroad spur, and
- construction of the Sheetpile Wall Project directly adjacent to, and upstream of the replaced railroad trestle bridge on Lakeville Street (completed in 2015)

Existing 100-Year Floodplain Boundaries

The Draft EIR presented FEMA Flood Insurance Rate Maps (FIRMs) effective as of February 19, 2014. These maps reflect the reduced 100-year floodplain boundaries that have resulted from the City's flood control improvements. These FIRMs relied on the City's stormwater monitoring model (XP-SWMM), including its accurate topographical data, and reliance on almost 100 years of Petaluma rainfall data and previous flood events.

According to these 2014 FIRMs, a majority of the Payran neighborhood was removed from the highest risk flood zone (or Zone AE) with implementation of the Petaluma Flood Control Project. However, some properties on Jess Avenue, Cordelia Drive, West Payran Street and Pidgeon Court remain in the high-risk Flood Zone AE. The U.S. Army Corps of Engineers and City of Petaluma have completed all planned flood control improvements to the Petaluma River in the Payran area, and the Army Corps is working to finalize and certify this 30-year Flood Control Project. Once certified, it is anticipated that most or all properties in this area will be removed from the high-risk flood plain. In the meantime, the City applied for and received approval from FEMA for a special flood zone designation called "A99". The A99 designation is for areas that have received substantial flood improvements, but where flood control projects are not yet complete or not yet accounted for in FEMA mapping.[6]

The Draft EIR (Figure 11-1) also presented the boundaries of the FEMA 100-year flood boundaries at and near the site based on the 2014 FIRMs. A larger-scale image of that same Draft EIR figure is shown on **Figure 4-2**, specifically indicating where the AE zone applies to the project site, and where the A99 flood zone designation is applicable to portions of the adjacent Payran/Jess/Graylawn neighborhood.

[6] City of Petaluma, letter to Petaluma Homeowners and Residents within the Floodplain regarding Updated Flood Insurance Rate Maps Become Effective, February 17, 2014

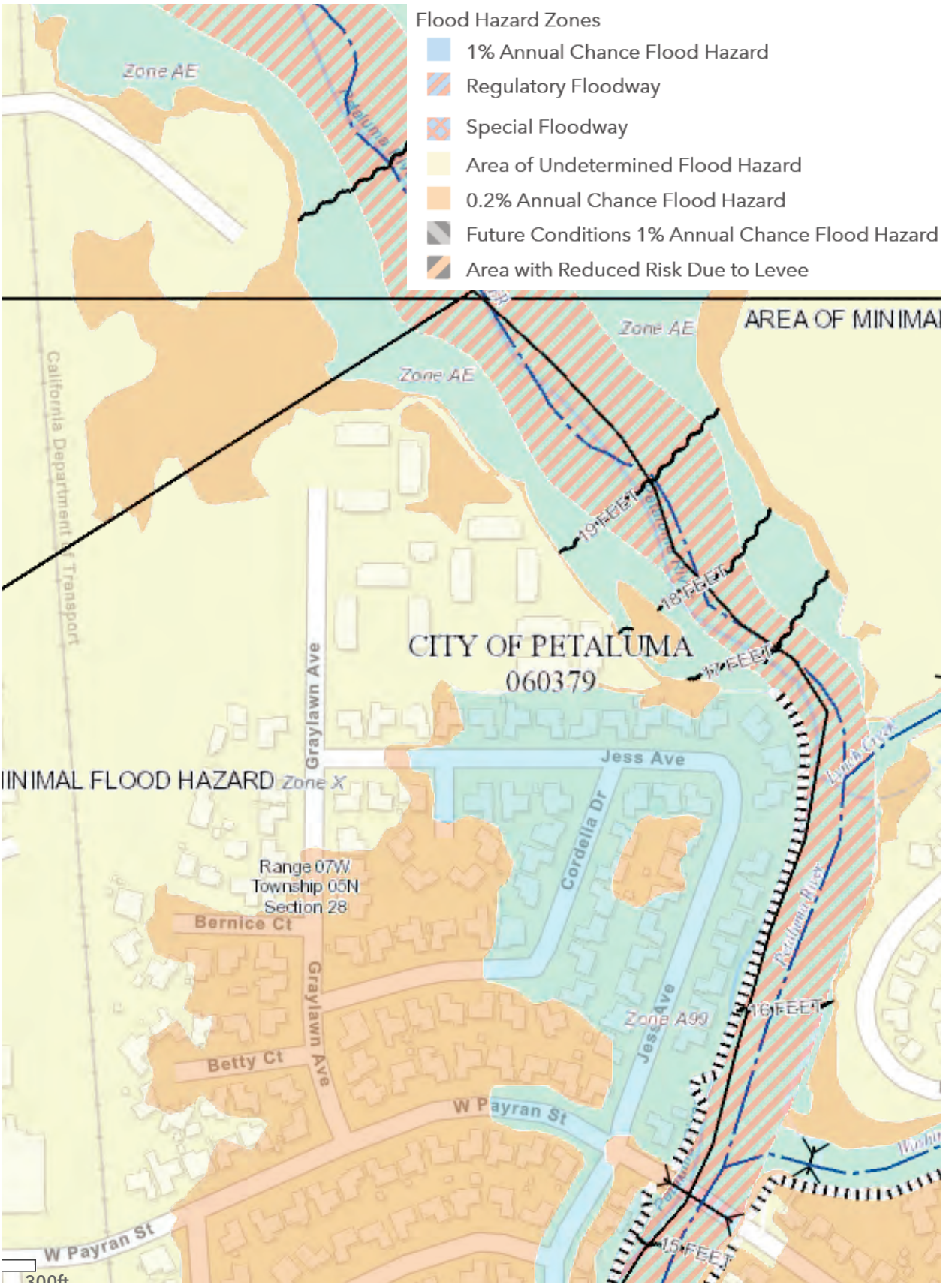


Figure 4-2
2014 FEMA Floodplain Designations,
Payran Neighborhoods

Source: FEMA Flood Insurance Rate Maps, February 2014

Cumulative Flood Control and Management Provisions

The City of Petaluma General Plan EIR concluded that cumulative development would increase drainage flows because of increased impervious surfaces. New streets, parking lots and rooftops will prevent natural drainage and infiltration of storm water through the soil, and runoff will increase significantly when sites are paved and the capacity for surface water infiltration is reduced. To reduce the potential for exacerbated flooding in the future, the City adopted ordinances and General Plan policies that seek to reduce flooding to the greatest extent feasible. These ordinances and policies provide an approach to flood control that is applicable to all cumulative development projects (including development of the project site). This approach includes the following:

- No additional development is permitted on lands within a 200' setback from the centerline of the Petaluma River within the City's Urban Growth Boundary.
- Properties upstream of the Corps weir and below the confluence of Willow Brook Creek (which include the Project site) are to 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.
- Properties within the Petaluma watershed and outside of the City of Petaluma (i.e., upstream of the City boundaries) should not be modified in any manner that reduces stormwater storage capacity. Responsible public agencies should work to preserve and expand detention basin capacity within the watershed to maintain or reduce peak discharge volumes.
- New development within the floodplain shall adhere to a zero-net fill policy to preserve and enhance floodplain capacity and to ensure no detrimental impact to downstream flows, including increases in peak discharge volumes in the downstream areas.
- Where appropriate, new development shall implement zero-net runoff, and assess site-specific impacts and identification of mitigations.

Cumulative Effects of General Plan Policy Implementation

The Draft EIR (starting at page 11-36) presented a cumulative analysis that evaluated the relative benefits of increased upstream stormwater detention and river terracing. That cumulative analysis demonstrated that combining upstream detention with terraced riverbank grading provides for the most significant reduction in the River floodplain boundary of approximately 183 acres as compared to base flood flows and FEMA's February 2014 floodplain boundaries. The Draft EIR also compared different cumulative scenarios (e.g., terracing without upstream detention and upstream detention without terracing), but these different scenarios did not achieve the same level of benefits in terms of reductions in floodplain boundaries. The most significant reductions in water surface elevations throughout the River can be achieved if all future cumulative development within the City and subject to General Plan polices, as well as non-City property in the upstream watershed, were to implement policy and ordinance requirements that would provide for the following:

- development setbacks from the centerline of the Petaluma River
- construction of flood terrace systems in downstream reaches (upstream of the constriction weir) [7]
- preservation and expansion of upstream detention basin capacity[8], and
- achieving a net-zero increase in peak discharge volume, where appropriate

[7] The City's Denman Reach Terracing Project implements this policy.

[8] Denman Phase 4 consists of a 10-acre detention basin and implements this policy.

The Draft EIR (Figures 11-7 through -9) presented the projected 100-year flood boundaries under a scenario with cumulative upstream detention and terracing in all downstream reaches to the point of the constriction weir. These figures showed certain (mostly upstream) areas that would receive reductions in floodplain boundaries, and certain (mostly downstream) areas that would receive minor increases in floodplain boundaries under this cumulative scenario. A larger-scale image of the same Draft EIR figure is shown on **Figure 4-3**, specifically indicating the anticipated reductions in base flood elevations within portions of the adjacent Payran/Jess/Graylawn neighborhood under this cumulative scenario (i.e., with upstream detention, and terracing in all downstream reaches including the project site).

Hydrology-Related Pros and Cons of River Terracing

Members of the public and certain Planning Commissioners and City Councilmembers have raised questions about the wisdom of the City of Petaluma's approach to addressing flooding conditions as embedded in the General Plan policies described above. These comments are not specific to the Project or the Draft EIR, but rather pertain to overall citywide planning direction for flood control. Many of these comments refer to analysis presented in the Draft EIR as well as the separate analysis of the Denman Terrace project, demonstrating that terraced grading results in increased water surface elevations at downstream reaches of the River, including in the downtown Petaluma area. Although this issue is not specific to the Sid Commons project, if the City were to consider changes to its overall approach for flood control specifically pertaining to terraced grading, such a change would have substantial implications on the Sid Commons project. Based on City staff direction pursuant to existing General Plan polices, the Sid Commons project (both the original Project and now the Revised Project) includes a required river terracing program.

Potential Cumulative Flood Control Approaches

As summarized above and as presented in the Draft EIR (starting at page 11-36), the relative benefits of increased upstream stormwater detention and river terracing provide for significant reductions in citywide water surface elevations under the 100-year flood scenario. Hydrology modeling of this combined citywide approach demonstrates that certain areas (mostly in the upstream reaches of the River) would receive reductions in floodplain boundaries, and certain areas (mostly in the downstream reaches of the River and including downtown) would receive minor increases in floodplain boundaries. Overall, this combined approach of upstream detention and terraced channel widening would result in a reduction of the citywide River floodplain boundary by approximately 183 acres as compared to base flood flows. Based on these results, the General Plan policy direction provides for upstream detention combined with River terracing.

The Draft EIR (Table 11-5) also presented the cumulative citywide implications of alternative flood control strategies including terracing only, upstream detention only, and detention with terracing only in the reaches of the River upstream of the Petaluma Outlet Mall. As re-printed below as **Table 4-10**, this comparison demonstrates the relative benefits and associated downsides of each approach. Under each scenario that includes upstream detention, the increases to the downstream floodplain are very marginal (i.e., approximately one-tenth of 1% increase to the floodplain representing less than a 1-acre increase in floodplain area). Conversely, the upstream benefits are substantial (i.e., approximately a 20% or more decrease to the floodplain, and a decrease of between 140 and 183 acres in floodplain area).

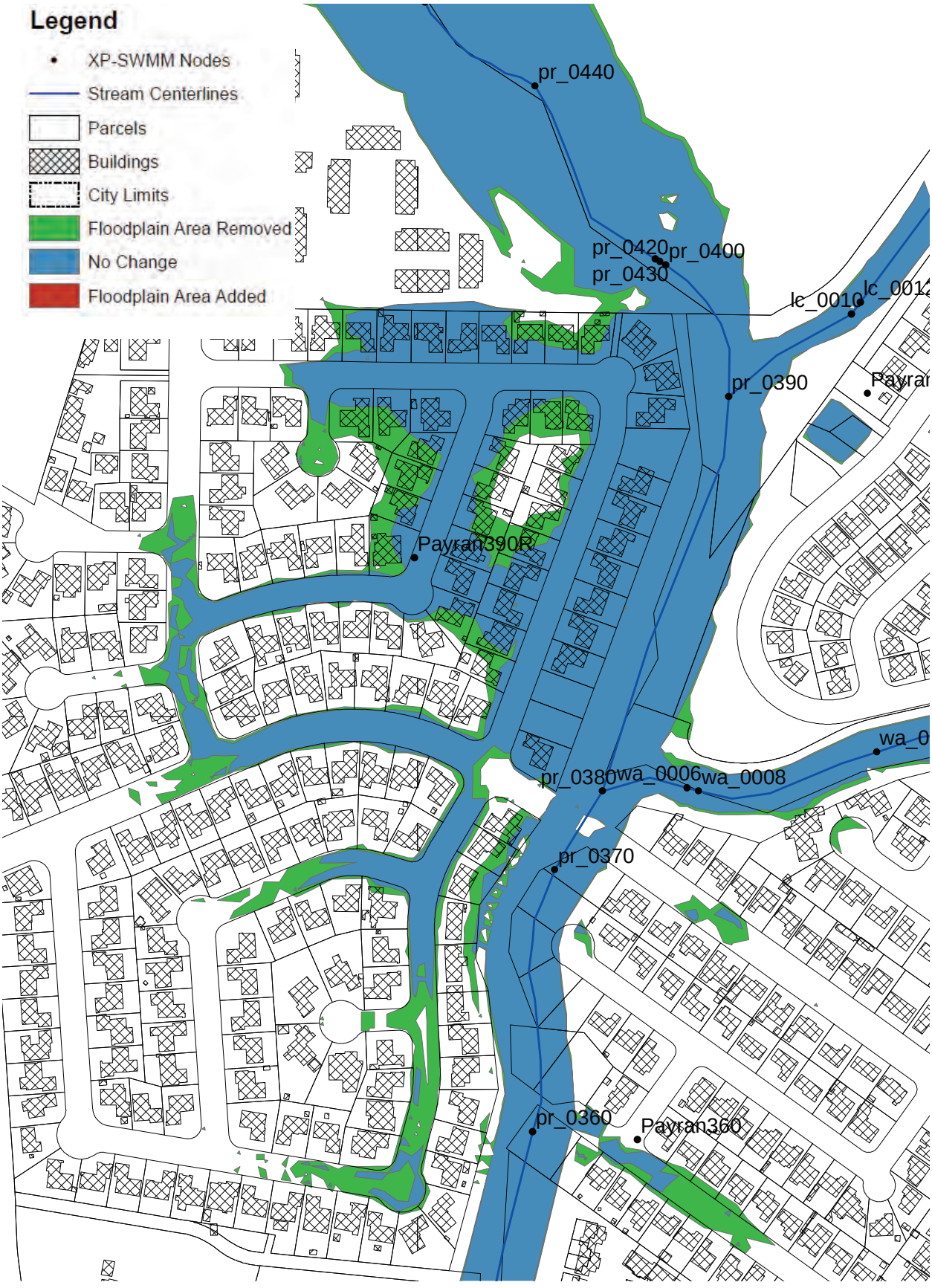


Figure 4-3
Cumulative Detention and Terraced Grading Effects on Base Flood Boundary at Payran Neighborhoods

West Consultants, 2/10/2017

Table 4-10: Change in Floodplain Boundary and Area, by Scenario (from Table 11-5 of Draft EIR)

	Increase [2]		Decrease [2]	
	Percent Increase in Floodplain Boundary	Area (acres)	Percent Decrease in Floodplain Boundary	Area (acres)
Terracing Only	0.7%	4.9	8.3%	60.0
Detention Only	0.1%	0.8	19.5%	140.9
Terracing upstream of Mall (only), and Detention	0.1%	0.9	23.3%	168.3
Terracing and Detention	0.1%	0.9	25.3%	182.9

Notes:

1. Comparison is based on visible area shown on Figure 11-8 (per Appendix 11A)
2. "Increase" from Base condition means additional flooding (red polygons of flood boundary graphics); "decrease" means a reduction (green polygons)

The Draft EIR (Figures 11-7 through -9) presented the projected 100-year flood boundaries under the cumulative scenario with upstream detention and terracing in all downstream reaches, and this same image is presented as an enlarged version for the lower reaches of the River in the Downtown Petaluma area (see **Figure 4-4**).

Assumed Detention

Under each of the "with detention" scenarios, the following detention basin concepts were provided by the City for inclusion in the hydrology model:

- Offline detention of Willow Brook Creek upstream of the railroad crossing, totaling 202.5 acre-feet (5 feet deep over 40.5 acres)
- Offline detention of Lichau Creek downstream of Petaluma Hill Road, totaling 238 acre-feet (5 feet deep over 47.6 acres)
- Two parallel detention basins in the vicinity of the "railroad ditch" between Willow Brook Creek and Corona Road, each totaling 23 acre-feet (5 feet deep over 4.6 acres)
- Offline detention of the Petaluma River in the vicinity of Bailey Road, totaling 150 acre-feet (5 feet deep over 30 acres)
- Excavation of a portion of the Benson property to provide additional detention of approximately 15 acre-feet, and
- Excavation of the Hummel property to provide additional detention of approximately 24 acre-feet

Unless each of these upstream detention basin concepts is implemented, the full benefits under any of the "with detention" scenarios for cumulative citywide flood control will not be fully achieved.

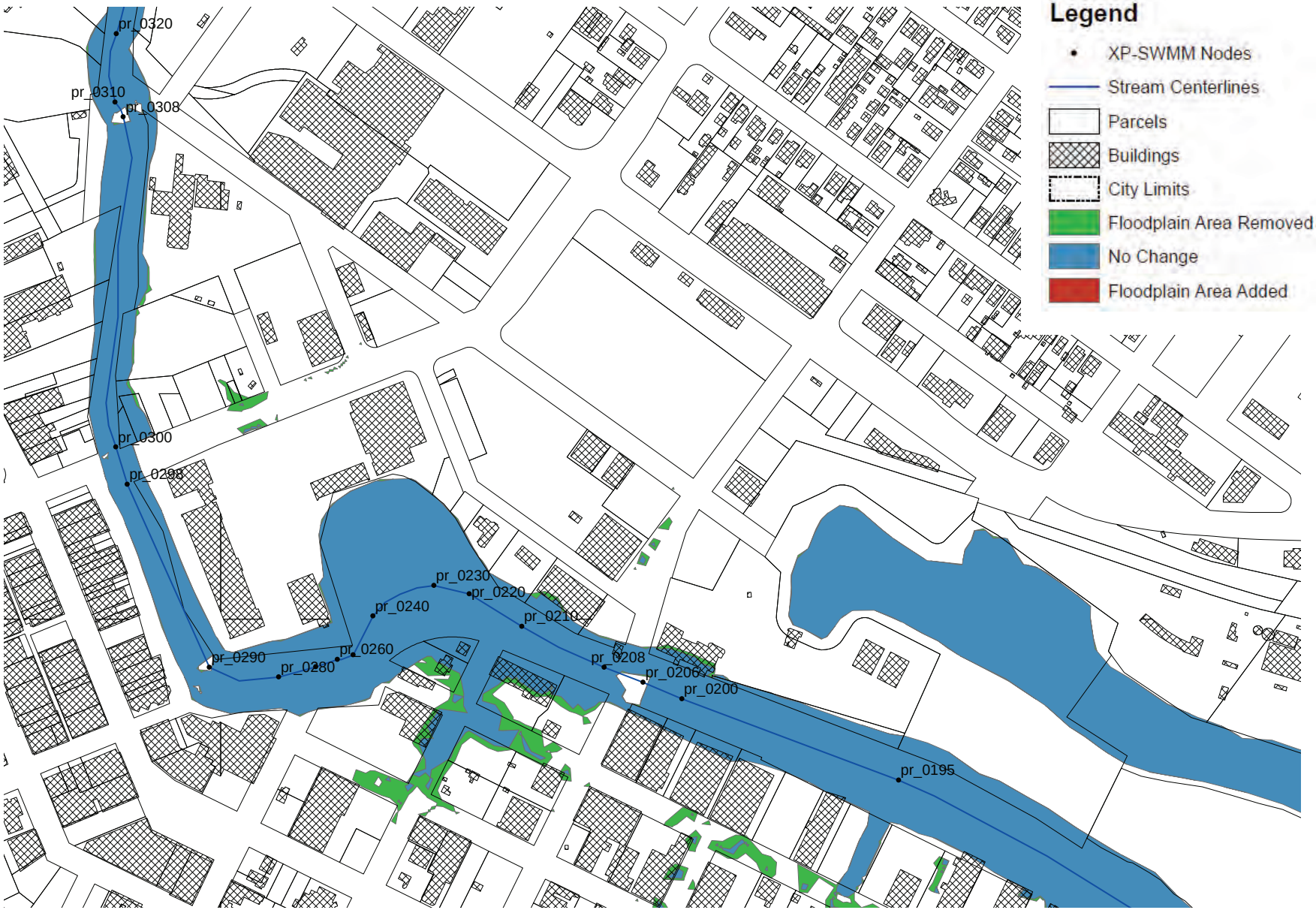


Figure 4-4
Cumulative Detention and Terraced Grading Effects on Base Flood Boundary, Lower Petaluma River

West Consultants, 2/27/17

Implications of No Detention

Table 4-10 also demonstrates that a scenario including River terracing only (i.e., no upstream detention) has substantially greater implications related to increases in the floodplain within certain downstream reached of the River, including downtown. Floodplain increases under such a scenario are substantially greater (i.e., nearly 1% increase to the floodplain representing almost 5 acres of increased floodplain area), and the upstream benefits are substantially reduced (i.e., only approximately an 8% decrease to the floodplain and only about 60 acres of decrease in floodplain area). The Draft EIR Appendix 11A presented the projected 100-year flood boundaries under the cumulative scenario with terracing only, and this same image is presented as an enlarged version for the lower reaches of the River in the Downtown Petaluma area (see **Figure 4-5**). As indicated in Figure 4-5, even under this less optimal scenario, the implications of increased flooding in the downtown are minor.

Water Surface Elevations under Different Scenarios

Two separate CEQA documents prepared by the City to date have provided analysis of the effects related to River terracing. These CEQA documents include the CEQA document for the Denman Terracing Phase 3 study (a separate terracing project upstream of Corona Road) and the Sid Commons project. Both of these analyses have documented a minor increase in downstream Petaluma River water surface elevations as compared to base flood flows as being attributable to River terracing. These documented minor increases in water surface elevations at downstream locations appear to be attributable to the increase in capacity of the River channel due to terracing and its ability to convey increased flows downstream. A comparison of the relative change (increase or decrease) in water surface elevations at several selected locations (or nodes) along the River demonstrate the individual effects of each of these terracing projects (see **Figure 4-6** for select node locations along the River). These changes are also compared to the estimated changes in water surface elevations under cumulative buildout scenarios with and without upstream detention, as shown in **Table 4-11**.

Table 4-11: Relative Change in Water Surface Elevation (feet), by Project and per Cumulative Scenarios

		Denman Phase 3 [1]	Sid Commons [2]	Cumulative (Detention plus Terracing) [3]	Cumulative (Terracing only) [3]
700	Upstream of Old Redwood Hwy.	- 0.20	0	- 0.81	- 0.25
650	Downstream of N. Petaluma Blvd.	- 0.69	0	-1.18	- 0.78
540	At Capri Creek	0	- 0.15	- 1.20	- 1.06
500	Upstream of Sid Commons	0	- 0.42	- 1.25	- 0.28
400	Downstream of Sid Commons	0.01	0.02	- 0.67	0.20
300	At E. Washington Street	0.03	0.02	- 0.48	0.26
230	At C Street	0.03	0.02	- 0.44	0.27
195	At F Street	0.02	0.02	- 0.34	0.23

Sources:

1. West Consultants, Inc., Phase 3 Denman Reach Terracing Hydraulic Evaluation, March 18, 2015

2. West Consultants, Inc., Sid Commons Hydraulic Evaluation, February 22, 2017

2. West Consultants, Inc., Detention and Terracing Evaluation Results, December 22, 2016

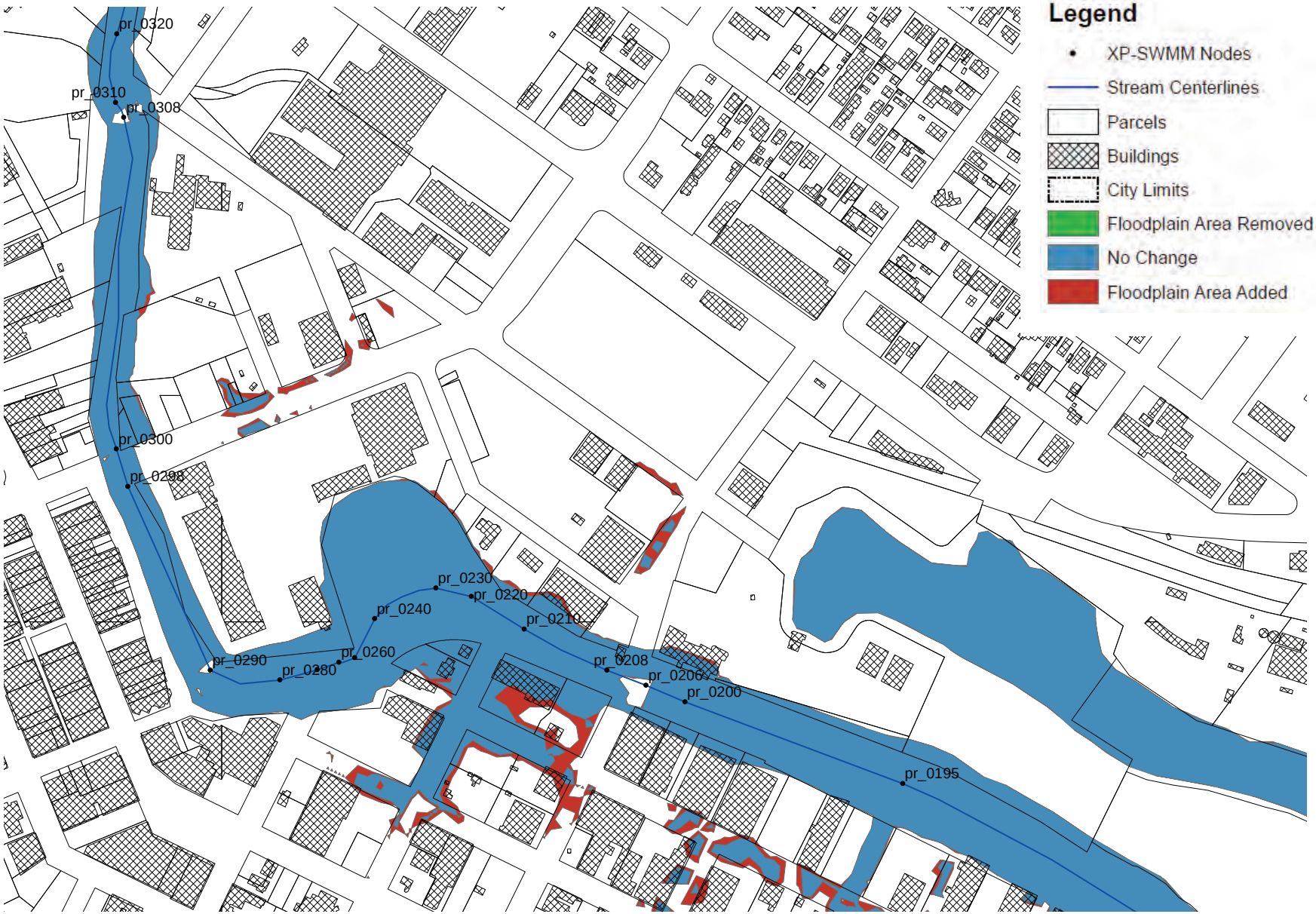


Figure 4-5
Cumulative Effects on Base Flood Boundary with Terraced Grading Only, Lower Petaluma River

West Consultants, 2/27/17

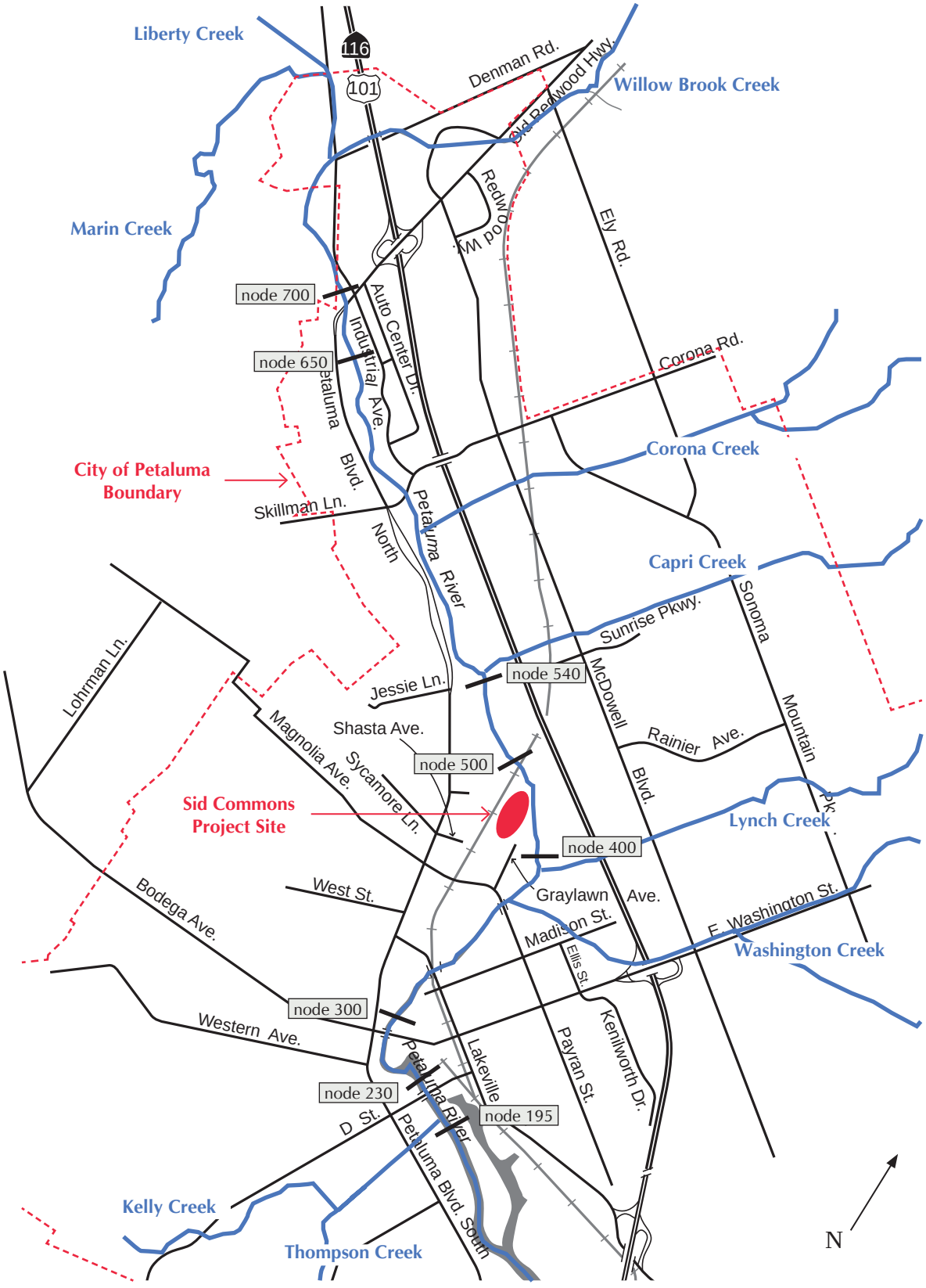


Figure 4-6
Hydrology Model "Node" Locations along Petaluma River

The sample size of only two recent projects is too small to identify a definitive future outcome of the General Plan's flood control program. Both of these projects (Denman phase 3 and Sid Commons) include terraced grading designed to convey a 100-year storm event, and the Denman Phase 3 analysis in 2015 did not yet include detention, which was added as Phase 4 of Denman.[9] The comparisons presented in Table 4-11 represent only a conservative and partial temporary progress towards the preferred cumulative scenario of terracing combined with upstream detention (i.e., this comparison does not include the Denman Phase 4 detention), wherein the water surface elevations decrease at all locations. Although this small sample size does indicate that localized terraced grading to increase the River channel capacity does achieve localized reductions in upstream water surface elevations, the full benefits of the General Plan's flood control program will not be fully achieved without commensurate upstream detention projects to reduce flood flows.

Of the approximately 675 acre-feet of expected upstream detention capacity assumed in the City's hydrology model (see Assumed Detention, above), only about 40 acre-feet of planned detention capacity is located on sites within the City's jurisdiction. Achieving the more substantial increased detention capacity needed to meet the General Plan goals will require increased coordination and cooperation with Sonoma County and the Sonoma County Water Agency. The larger detention facilities that are part of the General Plan strategy (i.e., at Willow Brook Creek, at Lichau Creek, at the railroad ditch, and near Bailey Road) are all located outside of the City boundaries.

However, even under partial implementation efforts, the minor increases in water surface elevations attributed to the Denman Phase 3 and Sid Commons terracing projects show very little (0.02 to 0.03 feet, or approximately one-quarter inch) to no measurable increase on downstream water surface elevations and/or floodplain boundaries.

Project-Specific Effects on Flooding

General Plan flood control and management policies that apply to properties upstream of the Corps weir and below the confluence of Willow Brook Creek specifically apply to the Project site. Based on these requirements, any development on the project site is required to provide a Petaluma River Corridor set-aside for the design and construction of a flood terrace system that allows the River to accommodate a 100-year storm event. Accordingly, the original Project (and now the Revised Project) includes a terraced grading plan for the section of the riverbank located within the site and extending approximately 300 feet downstream along the adjacent Oak Creek Apartments parcel. 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, specifically including improving the flood conveyance capacity and flow efficiency of the River, while preserving and enhancing habitat value and providing public access.

Relationship of Development at the Site to Citywide Flood Control Policies

Both the original Project and now the Revised Project (as described in Chapter 2 of this Final EIR) provide a 200' setback from the centerline of the Petaluma River, consistent with General Plan policy. No new apartment structures pursuant to either the original Project or the Revised Project are located within the 100-year floodplain of the Petaluma River.

[9] The fourth phase of the Denman Reach project provides off-line detention basins to capture peak flows during storm events, and sediment removal near the Corona Road Bridge. The detention basins at Denman Reach will provide approximately 10 acre-feet of storage. According to analysis performed by WEST Consultants, Inc., the detention basins provided water surface elevation reduction through the Denman Reach area with lesser reductions downstream, and the sediment removal provides a larger water surface reduction in the area of Corona Road, but slightly increased levels downstream. Combined, the detention and sediment removal have a net result of decreased peak flow and water surface elevations.

Both the original Project and the Revised Project include a terraced grading plan along the riverbanks fronting the Project site, consistent with General Plan policies to improve flood capacity and flow efficiency. The terraced grading plan for the original Project would have resulted in removal of approximately 21,140 cubic yards of soil from along the western riverbank. Like the original terracing plan, the Revised Project's terracing plan would also result in a net removal of soil from the western riverbank, thereby expanding the channel capacity and lowering the adjacent base flood elevation. The Revised Project's terraced grading plans have been slightly modified to enable greater preservation of trees, resulting in an approximate 4 percent decrease in expanded channel capacity, from 21,140 cubic yards of excavation to 20,250 cubic yards of excavation. Both terraced grading designs provide for a flood terrace system that allows the River to accommodate a 100-year storm event within the modified River channel.

Stormwater Runoff

Petaluma General Plan Policy 8-P-2 calls for retention of stormwater storage capacity on those properties within the Petaluma watershed that are subject to periodic surface water inundation and containment, and that are outside of (i.e., upstream of) the City of Petaluma. This policy also calls for responsible public agencies with jurisdiction over these upstream properties to preserve and expand detention basin capacity within the upstream watershed to maintain or reduce peak discharge volumes. This policy does not apply to the project site, which is within the City and downstream of identified upstream containment areas. General Plan Policy 8-P-33 calls for new development to implement zero-net runoff "where appropriate" based on site-specific assessment of impacts.

The Draft EIR included this site-specific assessment (Impact Hydro-4, beginning at page 11-26) and determined that zero-net runoff at the site was not appropriate. Analysis presented in the Draft EIR (beginning at page 11-26) concluded that, because of the site's location within the downstream portion of the watershed, existing runoff from the site leaves the site and passes downstream in the River prior to the onset of larger peak flows generated further upstream. Storing runoff on-site would delay flows leaving the site such that they would coincide with the arrival of peak flows from the upper watershed, which could increase flood levels in the River. The Draft EIR indicates that Projects immediately adjacent to the River in this area of the watershed can minimize their flood impacts by letting their runoff leave the site and enter into the downstream drainages as quickly as possible.

As indicated in the Draft EIR, the majority of the Project site is underlain by low permeable soil formations of Yolo and Clear Lake clays. Generally, these soil types are poorly drained, runoff rates are high and permeability is slow to very slow. As such, stormwater does not drain off the site quickly but also does not infiltrate (or seep into the ground) quickly. Instead, stormwater tends to spread and pond on the surface until the ground is saturated, and then runs off the site towards the River.

Development of the site with residential land use will create new impervious surfaces that will result in an increase in both the rate and amount of surface runoff from the site. The original Project would have resulted in a total of approximately 364,730 square feet of new impervious surface area generating increased runoff. The original Project did not provide on-site stormwater runoff detention to contain this increased runoff. Rather, increased runoff from the original Project was to exit the site and enter directly into the River after being treated for water quality. The Draft EIR presented the results of the City's XP-SWMM hydrology model to quantify potential increases in Petaluma River flows resulting from increased runoff due to the original Project. The Technical Appendix to the Draft EIR provided detailed information about the original Project's contribution to peak flood flows, as presented in **Table 4-12**, below.

Table 4-12: Original Project's Contribution to Increased 100-Year Flood Flow (cfs),

Node	Location	Base Flood Flow	Base plus Original Project Flood Flow	Original Project Contribution	% Original Project Contribution
700	Upstream of Old Redwood Hwy.	5,380	5,380	0	0%
650	Downstream of N. Petaluma Blvd.	5,279	5,279	0	0%
550	Upstream at Outlet Mall	7,765	7,752	-13	-0.17%
500	Upstream of Sid Commons	7,778	7,778	0	0%
460	Project Site at outfall	7,798	7,806	8	0.10%
400	Downstream of Sid Commons	8,710	8,737	24	0.27%
340	At Payran Street	9,868	9,911	43	0.43%
300	At E. Washington Street	9,894	9.936	42	0.42%
230	At C Street	10,013	10,048	35	0.35%
195	At F Street	10,369	10,404	35	0.34%

Draft EIR, Appendix 11-A, West Associates

As indicated in the Draft EIR, the increased flood flows attributable to the original Project near its outfall location (node 460 in Table 4-12, above) show a minor increase in the peak 100-year storm flow in the River of about one-tenth of 1 percent. This increased flow was found to be within the limits of model tolerances and was not considered significant. Increased runoff due to the original Project, combined with increased capacity of the river channel from the original Project's terraced grading would result in similar, minor increases in 100-year storm flows downstream of the site (less than one-half of 1% at all measured locations). The increased flows at further downstream locations appear to be attributable to the increased capacity of the River channel and it ability to convey increased flows downstream.

The Revised Project will result in a total of approximately 362,430 square feet of impervious surface area (or marginally less coverage of impervious area as compared to the original Project). This similar increase in impervious surface will generate similar runoff from the site as was modeled for the original Project, and will result in a similar, less than significant increases in peak 100-year storm flows in downstream reaches of the River.

Water Surface Elevation

The Draft EIR (beginning at page 11-27) presented the results of hydrology modeling conducted to quantify the flooding effects resulting from development of the original Project, including its increased runoff from new development and the terraced grading plan along the River. That analysis indicated that the original Project would have reduced water surface elevations of the 100-year flood within the site and would have reduced water surface elevation of the 100-year flood in certain reaches upstream of the site. It also found that the original Project would have resulted in a slight increase in water surface elevations of the 100-year flood at certain downstream reaches. The Draft EIR Table 11-4 presented the results of the City's XP-SWMM hydrology model to quantify potential changes in water surface elevations of the 100-year peak flood resulting from the original Project (including both increased runoff and terraced grading), as summarized in **Table 4-13**.

Table 4-13: Original Sid Commons Project's Effects on 100-Year Water Surface Elevations (WSE, in feet NAVD88)

Node	Location	Base WSE	Base plus Original Project WSE	Original Project Contribution (feet)	% original Project Contribution
700	Upstream of Old Redwood Hwy.	34.43	34.43	0	0%
650	Downstream of N. Petaluma Blvd.	33.57	33.57	0	0%
540	Upstream at Outlet Mall	23.46	23.32	-0.15	-0.64%
500	Upstream of Sid Commons	21.93	21.52	-0.42	-1.91%
460	Project Site at outfall	19.94	19.57	-0.37	-0.36%
400	Downstream of Sid Commons	16.55	16.58	0.02	0.12%
340	At Payran Street	12.07	12.10	0.02	0.16%
300	At E. Washington Street	10.68	10.70	0.02	0.19%
230	At C Street	10.09	10.12	0.03	0.30%
195	At F Street	9.92	9.24	0.02	0.22%

Draft EIR, Table 11-4 and DEIR Appendix 11-A, West Associates

The modeling results indicate a reduction in water surface elevation just upstream of the site of just over 4/10 of a foot, and a reduction in water surface elevation further upstream of the site of just over one-tenth of a foot. The results also indicate a minor increase in the elevation of peak water surfaces downstream by an average of approximately 0.02 feet (or between 1/4 and 1/3 inch). These increases were found to be within the accuracy tolerances of the hydrology model and would result in less than significant increases to the current downstream 100-year floodplain boundaries.

The Draft EIR (Figures 11-4 through 11-6) presented the projected 100-year flood boundaries after implementation of the original Project. These figures did not include any other cumulative detention or terracing efforts, only those changes attributed to the original Project. A larger-scale image of the same Draft EIR figure is shown on **Figure 4-7**, specifically indicating the anticipated changes in base flood elevations within portions of the adjacent Payran/Jess/Graylawn neighborhood that would result from terraced grading within the site. A larger-scale image of the Draft EIR figure indicating the changes to the base flood elevations within lower reaches of the River in the Downtown Petaluma area that would result from terraced grading within the site is shown in **Figure 4-8**.

As was disclosed in the Draft EIR, the minor increase in downstream Petaluma River water surface elevations was also previously documented as part of the Denman Terracing Phase 3 study (a separate terracing project upstream of Corona Road). Therefore, an additional evaluation was conducted for the Draft EIR to consider the effects of both the approved Denman Phase 3 terracing project and the original Project's proposed terracing. This evaluation found maximum water surface elevations to be lower than those elevations previously reported for the 2012 Denman Phase 3 terracing project evaluation. The results of this combined evaluation indicate that the maximum water surface elevation with both the Denman terracing and the original Project's terracing projects in flood-prone areas such as C Street and 1st Street in downtown would be lower than previously identified in the approved 2012 Denman Phase 3 terracing project only. Therefore, impacts due to a change in the surface flood elevation as a result of the original Project were found to be less than significant.

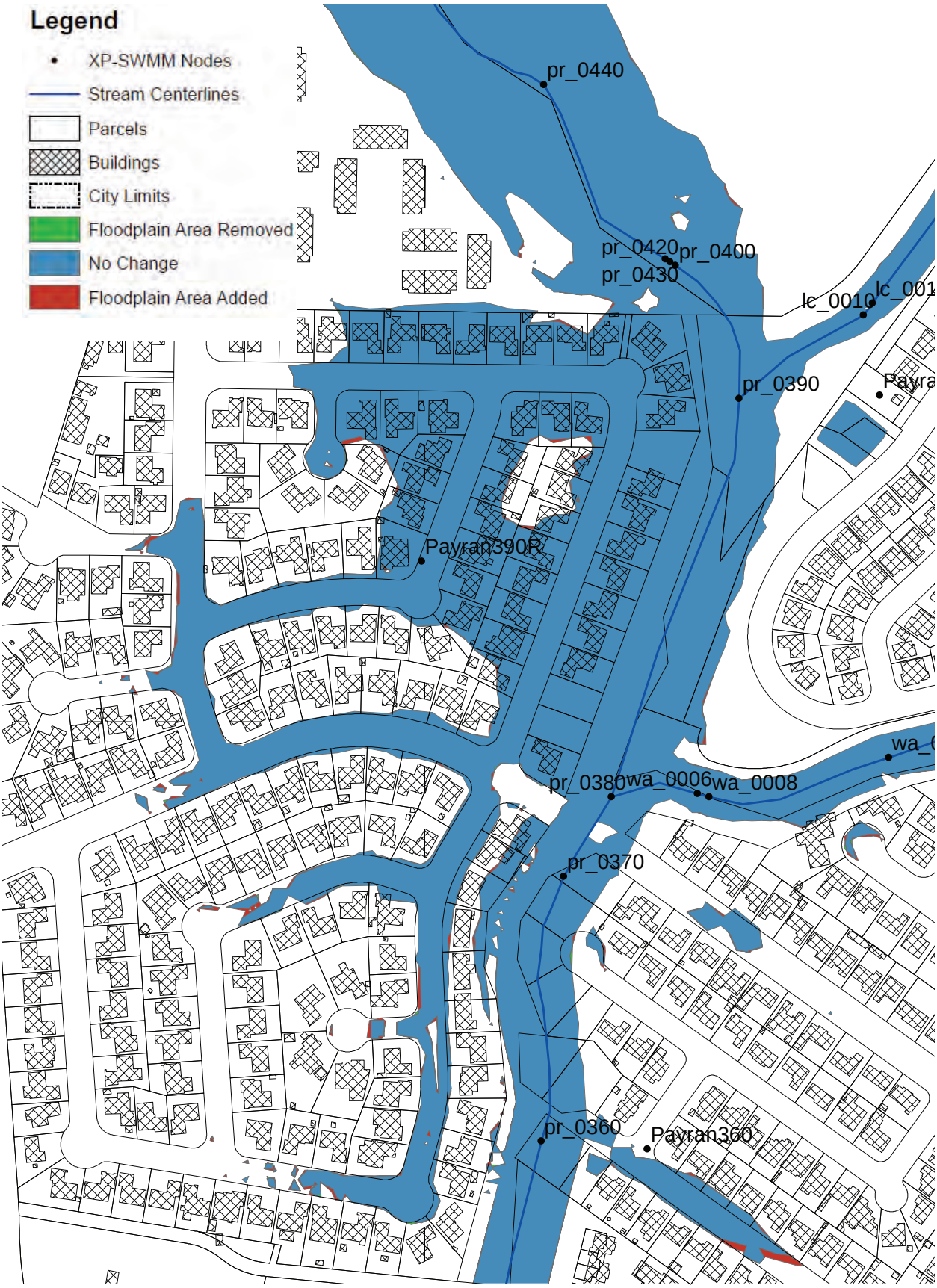


Figure 4-7
Sid Commons Terracing Effects on Base Flood Boundary at Payran Neighborhoods

West Consultants, 2/27/17

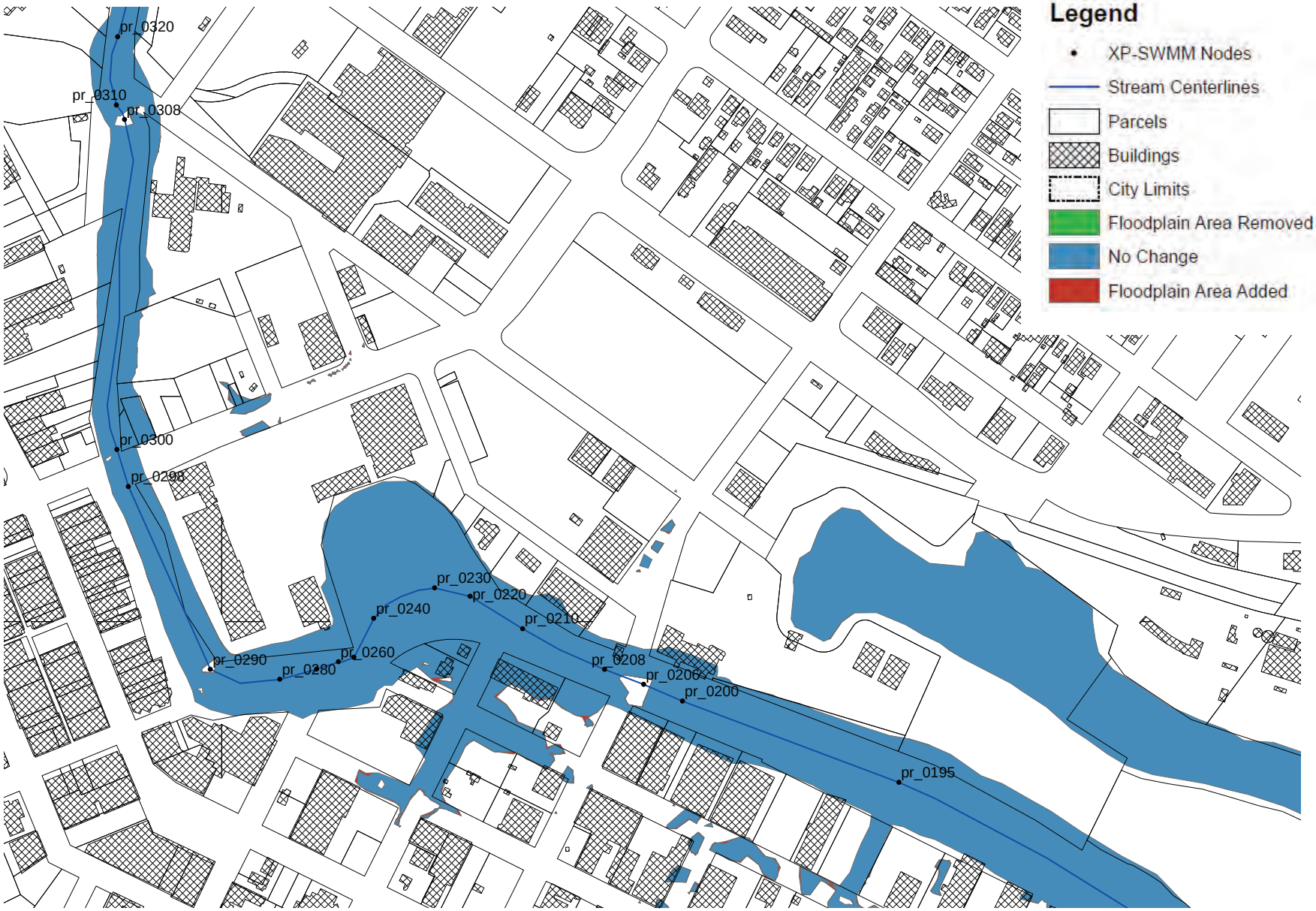


Figure 4-8
Sid Commons Terracing Effects on Base Flood Boundary, Lower Petaluma River

West Consultants, 2/27/17

Like the original Project, the Revised Project includes a terraced grading plan designed to convey 100-year peak flows in the River. The Revised Project's terraced grading plans result in an approximate 4 percent decrease in expanded channel capacity (from 21,140 cubic yards of excavation, to 20,250 cubic yards of excavation). This modified grading scheme would result in the same reductions in water surface elevations under 100-year flood conditions, with commensurate reductions in 100-year floodplain boundaries upstream and adjacent to the site, and similar slight increase in water surface elevations and less than significant additions to the current 100-year floodplain boundaries downstream of the site.

River Sedimentation

The City has received numerous comments from the public, Planning Commissioners and City Council members about the effects of increased levels of sediment in the Petaluma River, and questioned whether the hydrology modeling presented in the Draft EIR adequately addressed the effects of River sedimentation.

Background

A thorough examination of the historical hydrology and ecology of the Petaluma River watershed is provided in the *Petaluma Valley Historical Hydrology and Ecology Study*. This Study finds that profound landscape changes have affected ecosystem functions and decreased the overall ecosystem services that the River's watershed once provided. Included among the factors that continue to threaten the Petaluma River watershed over the coming decades include, "*erosion and sedimentation, driven by a combination of urban and agricultural development, vegetation removal and hydrologic changes . . . throughout the watershed.*" [10]

A separate study of the Petaluma River describes erosion as, "*a natural process that is an important component of landscape and channel evolution. However, urban development and agricultural land management within the watershed can exacerbate natural erosional processes. The increased erosion creates excessive volumes of sediment that, when delivered to the Petaluma River can degrade water quality and can impact beneficial uses*."[11]

The California State Water Resources Control Board (WRCB) publishes a list of the state's impaired water bodies. The 2010 WRCB list identifies the Petaluma River as being impaired by a number of pollutants, but specifically including sediment. This listing identifies the source of sediment pollution as being construction and land development, and urban runoff and storm sewers.[12] Additionally, sediment in the Petaluma River is influenced by tidal activity, which carries sediment from San Pablo Bay upstream twice a day and deposits sediment in the turning basin and along the River margins.

Sediment Deposition

Certain effects of increased erosion and sedimentation are well known to the City of Petaluma. The deposition of sediment has long been evident near the River channel mouth to the San Pablo Bay, affecting the overall channel gradient and surface flow regime, and limiting watercraft navigation because of lowered water depth. For decades, the US Army Corps of Engineers had conducted operations and maintenance activities that dredged the River channel to 200-feet in width and to a depth of 8 feet mean lower low water (MLLW) elevation. Although the maintenance dredging cycle was to be conducted every three to four years, the last time the channel flats were dredged was in 1998 and the last time the River channel was dredged was in 2003. Since then, federal funds have not been made available to award a maintenance contract for

[10] San Francisco Estuary Institute and Aquatic Science Center, *Petaluma Valley Historical Hydrology and Ecology Study*, March 2018

[11] Aquatic Science Center, *Petaluma River Impairment Assessment for Nutrients, Sediment/Siltation, and Pathogens*, March 31, 2010

[12] State Water Resources Control Board, Final 2010 Integrated Report (CWA Section 303(d) List / 305(b) Report)

needed dredging.[13] The lack of dredging could have substantial impacts on the City's flood control measures and may compound revenue losses to the local economy from watercraft and waterfront-based businesses.

Increased sedimentation also results in buildup of silt and sediment within the river channel, especially where bridges structures or river bends enable buildup of sediment to occur. The City's current Denman Phase 4 Project includes acquisition of a flood-prone parcel located on the Denman Reach of Petaluma River, creation of additional flood water storage in a detention basin and/or terracing, revegetation and habitat enhancement, and removal of an approximately 8,000 cubic yard sediment plug from the River in the vicinity of the Corona Road bridge crossing. The purpose of the entire Denman Reach Project (Phases 1 through 4) is to restore flow-carrying capacity of the River and manage sediment buildup.[14]

Other Adverse Effects of Increased Sedimentation

Excessive sediment delivery to the Petaluma River can also have many other adverse effects on the physical River channel, causing changes in its geometry, habitats, landform, and water and sediment transport capabilities.

- Sediment buildup in the River channel bed can cause an increase in overall channel width, exposing the riverbanks to faster and deeper water during high flow events and potentially causing instability and even further erosion.
- Changes in River flow due to sediment may undercut established riparian vegetation and ultimately may reduce the quality of the riparian corridor.
- Excess sediment can have adverse effects on fish communities by degrading potential spawning gravels, affecting the food supply for salmonids like steelhead, and already low springtime surface flows may be decreased by an aggraded channel bed, limiting the ability of fish to out-migrate.
- Excess sedimentation can also partially contribute to frictional resistance that water experiences when passing over land and channel features. An increase in frictional resistance in the River's flow can cause a decrease in the velocity of floodwaters flowing through the River channel. [15]

Impacts and Mitigation Requirements of the Project

Although not the focus of most comments about cumulative River sedimentation, it is important to note that mitigation measures and compliance with applicable regulatory requirements such as the city's erosion control ordinance and compliance with storm water pollution prevention (SWPPP) measures will reduce the Project's contribution to cumulative River sedimentation to levels of less than significant, as indicated below.

Construction Period

As disclosed in the Draft EIR, when the Project site is prepared for development the earthwork required to establish roads, building sites and to implement the river terrace grading will expose soils that are prone to erosion, and can cause large quantities of sediment to be washed into the adjacent River through surface runoff, especially after heavy rainfall. To address construction-period erosion and siltation, the Project applicant will be required to demonstrate compliance with the NPDES General Construction Activities Permit, prepare a site-specific Storm Water Pollution Prevention Plan (SWPPP) per NPDES general construction permit requirements and obtain approval by the City of an Erosion Control Plan prior to the issuance of any

[13] https://www.spn.usace.army.mil/Missions/Projects-and-Programs/Projects-by-Category/Projects-for-Navigable-Waterways/Petaluma-River-O-M----/

[14] City of Petaluma, Denman Reach Phase 4 - Petaluma River Flood Management Project, Initial Study Document Supporting the approval of a Mitigated Negative Declaration, August 2018

[15] Aquatic Science Center, March 2010

grading permits. City requirements for the Erosion Control Plan include measures that trap sediment such as inlet protections, straw bale barriers, straw mulching, straw wattles, silt fencing, check dams, terracing and siltation, or sediment ponds. These requirements are further specified in Mitigation Measure Hydro-1, which establishes design requirements and implementation measures for minimizing Project-generated erosion to be set forth in the applicant's SWPPP and in accordance with State and RWQCB design standards. Mitigation Measure Hydro-1 requires, at a minimum, the following or similar erosion control provisions:

- leave existing vegetated areas undisturbed until construction of improvements on each portion of the development site is ready to begin
- immediately re-vegetate or otherwise protect all disturbed areas from both wind and water erosion upon the completion of grading
- collect storm water runoff into stable drainage channels, from small drainage basins, to prevent the buildup of large, potentially erosive storm water flows
- direct runoff away from all areas disturbed by construction
- use sediment ponds or siltation basins to trap eroded soils before runoff is discharged into on-site or off-site drainage culverts and channels
- 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 and maintain these facilities until all disturbed up-slope areas are fully stabilized
- to the extent possible, schedule major site development work involving excavation and earthmoving for construction during the dry season
- 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

The mitigation measures identified above are the City of Petaluma's baseline mitigation requirements. Subsequent permit requirements may result in different and potentially greater mitigation obligations based on site-specific information and determined through agency coordination. As concluded in the Draft EIR, when properly designed and implemented, the requirements of Mitigation Measure Hydro-1 can reduce effects on the quality of storm water runoff from construction sites to less than significant levels.

Post Construction / Operations

As described in detail in the Master Response regarding Stormwater Quality (below), the Project will be subject to federal Clean Water Act mandates to control the discharge of stormwater from municipal separate storm sewer systems (MS4s), including implementation of best management practices (BMPs) to minimize the amount of pollutants, including sediment, in runoff. Permits required of the Project call for the design and implementation of post-construction Stormwater Management Programs with features and facilities to control pollutant sources and treat runoff prior to discharge from the site. Pursuant to Mitigation Measures Hydro-2A and -2B of the Draft EIR, the Project applicant will be required to obtain all permits and authorizations from applicable regulatory agencies, and BMP design elements shall demonstrate how the Project's post-construction runoff treatment is designed in accordance with requirements of the City's Storm Water Management regulations and NPDES MS4 requirements. When properly designed and implemented, these regulatory requirements and mitigation measure can reduce effects on the quality of storm water runoff from the site during operations, including sedimentation, to less than significant levels.

Effects of Cumulative Sedimentation on Hydrology Modeling

The majority of comments on the Draft EIR pertaining to River sedimentation questioned whether hydrology modeling prepared for inclusion in the Draft EIR adequately addressed the cumulative effects of River sedimentation, particularly as to potential downstream flooding conditions.

Hydraulic Roughness

In hydrology modeling, hydraulic roughness is defined as the measure of frictional resistance that water experiences when passing over land and within channel features (vegetation, rocks, and to a lesser degree sediment). Frictional resistance to river flow is an important determinant in calculating flow velocity. An increase in frictional resistance can cause a decrease in the velocity of water flowing through a channel or across a surface. Hydrology modeling calculations of stream discharge and floodwater elevations requires inclusion of the flow-impeding characteristics of the stream channel and its banks. Manning's roughness coefficient (or, as used in the City's XP-SWMM hydrology model, the "n value") is commonly used to assign a quantitative value to represent the collective effects of roughness, including vegetation, rocks and gravel, and the relative level of sediment carried in River flows. An increase in this "n value" will cause a decrease in the velocity of River flows, potentially affecting both the volume of flood flow at any given point and the resulting water surface elevation.

Pursuant to separate citywide hydrology modeling purposes, the City hydrology consultants (WEST Consultants, Inc.) conducted an evaluation of potential changes to the most recent hydrology model to evaluate the impacts of a number observed and possible changes in assumptions with the model. This included a preliminary evaluation of increased flooding potential due to the lack of dredging the Federal Channel, which extends from Washington Street Bridge downstream into San Pablo Bay. In this evaluation the hydrographic survey of the Petaluma River completed by the U.S. Army Corps in late 2017 and early 2018 was used as the existing "un-dredged" condition, and the dredged contours were removed from the model. The model was not revised to include the Corona Road sediment cleanout or the Denman property detention facility (Denman Phase 4) or the Sid Commons terraced grading concept. The purpose of this effort was to isolate the effects of increased sedimentation of the River. An abbreviated summary of the modeling results are presented in **Table 4-14**.

Table 4-14: Effects of Un-Dredged Conditions on 100-Year Flood Water Surface Elevations (feet)

Node	Location	Updated Base WSE	WSE with new "N" Values (feet)	Changes in Calculated WSE (feet)
700	Upstream of Old Redwood Hwy.	33.975	33.975	0.00
650	Downstream of N. Petaluma Blvd.	32.148	32.148	0.00
540	At Capri Creek	24.727	24.727	0.00
500	Upstream of Sid Commons	21.894	21.894	0.00
400	Downstream of Sid Commons	16.875	16.898	0.02
300	At E. Washington Street	11.022	11.176	0.15
230	At C Street	10.241	10.409	0.17
195	At F Street	9.565	9.605	0.04
110	Highway 101	8.502	8.502	0.00

Source: West Associates, May 2018

As indicted in Table 4-14, model changes in water surface elevation attributed to the increased sedimentation of the River (i.e. the dredged channel versus the un-dredged channel) generally account for less than 0.2 feet (or approximately 2.5 inches) of increased water surface elevation in the Turning Basin area of the river channel (near node 230 at C Street), with minimal to no effects upstream of Washington Street Bridge and downstream of F Street.

Follow-up Recommendations

Sedimentation in the Petaluma River occurs from fluvial and tidal processes, with sediment inputs from flooding events and tidal action that circulates suspended sediment and induces scouring currents on the Petaluma River channel network. The un-dredged condition of the River minimally increases the modeled flood elevation in the downtown area, but does not affect the Sid Commons area. The maintenance dredging of the River is for both vessel navigation and flood protection. The City is actively pursuing maintenance dredging to reestablish hydraulic design capacity. The current volume of sedimentation has a negligible effect on flood water surface elevation. If the un-dredged conditions of the river persists, the impacts on increased sedimentation will continued to be monitored by the City as part of ongoing flood control management efforts.

Master Response Regarding Stormwater Quality

The federal Clean Water Act mandates that controls on the discharge of stormwater from municipal separate storm sewer systems (MS4s) and Best Management Practices (BMPs) are required to minimize the amount of pollutants in runoff. In 2013, the California Water Resources Control Board issued permits for small MS4s pursuant to the National Pollutant Discharge Elimination System. These permits require design and implementation of post-construction Stormwater Management Programs and mandate that each municipality require development projects to include features and facilities that control pollutant sources, control runoff volumes, rates and durations, and treat runoff before discharge from the site. The Bay Area Stormwater Management Agencies Association (BASMAA) has created a Manual to assist applicants of development approvals to prepare materials that demonstrate their project complies with NPDES permit requirements.

Original Project

The original Project included a Stormwater Control Plan (CSW/Stuber Stroeh Engineering Group, Inc., July 2015) that was summarized in the Draft EIR (starting at page 11-16). The original Project's Stormwater Control Plan was prepared using the template and manual as provided by BASMAA.

As documented elsewhere in the Draft EIR, the original Project did not fully comply with site design measures of the BASMAA manual in that it did not conserve natural areas of the site as much as possible consistent with local General Plan policies, and did not fully comply with all stream setback ordinances and requirements. The Revised Project now includes setbacks from the River that demonstrate greater compliance with these site design measures.

The original Project's Stormwater Control Plan did comply with other site design measures for regulated projects that included:

- identifying potential sources of stormwater pollutants and providing for source control measures
- routing stormwater runoff to bioretention or other facilities that were sized and designed according to BASMAA criteria, and
- providing for ongoing maintenance of bioretention facilities

As documented in the Draft EIR (starting on page 11-18) the original Project would have resulted in approximately 364,730 square feet of impervious surface area. Bio-treatment facilities for the original Project

were based on runoff factors of 1.0 (i.e., 100% runoff) for pervious surfaces and runoff factors of 0.1 (i.e., 10% runoff) for landscaped areas, and a sizing factor of 4 percent (consistent with BASMAA criteria). The minimum size of bio-treatment facilities for the original Project was calculated to be approximately 14,589 square feet, whereas the original Project proposed a total of 19,249 square feet of bioretention area, or approximately 4,660 square feet more bio-retention facility area than required. The Draft EIR recommended Mitigation Measure Hydro-2A (SWCP Implementation) that required the original Project to be designed, constructed and implemented with all appropriate post-construction stormwater treatment measures to reduce water quality 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 is required to provide documentation of stormwater management measures that show compliance with the Small MS4 General Permit.

Revised Project

These requirements for the design and implementation of post-construction Stormwater Management Program remain applicable to the Revised Project. The Revised Project better complies with site design measures of the BASMAA Manual in that it conserves more natural areas of River Corridor, and (with a few minor exceptions) better complies with all stream setback ordinances and requirements. The Revised Project also complies with site design measures for regulated projects by incorporating impervious surfaces and source control measures, routing runoff to bioretention areas, and providing for ongoing maintenance. Implementation of these requirements will similarly reduce impacts to stormwater quality of the Revised Project to less than significant. The EIR mitigation measure represents the City of Petaluma's baseline mitigation requirement as lead agency, but subsequent permit requirements may result in different and potentially greater mitigation obligations based on site-specific information as determined through agency coordination.

Master Response Regarding Loss of Wetlands and Riparian Habitat

The City has received numerous comments expressing concern that the Project will result in the loss of wetlands and riparian habitat, and that this loss might exacerbate existing flooding conditions along reaches of the Petaluma River and adversely affect habitat values at the site. The following Master Response is intended to clarify the extent of wetland and riparian habitat at the site, the extent to which these habitat types currently retain or detain runoff from the site, and the significance of habitat loss and mitigation measures required of the Project to compensate for this loss.

Seasonal Wetlands

As presented in the Draft EIR and reconfirmed in a recent (January 2019) determination by the US Army Corps of Engineers, the approximately 15.45-acre net developable portion of the site contains approximately 0.62 acres of wetlands as defined pursuant to Section 404 of the Clean Water Act. These wetland areas include one deeper seasonal wetland of 0.28 acres and one 0.01-acre wetland near the River, and six small seasonal wetlands comprising 0.33 acres located on the Project site's westerly side near the SMART rail line. These smaller wetlands along the rail line are isolated from the River and above the 100-year flood elevation (see prior Figures 2-5 and 2-6).[16]

The majority of the remainder of the approximately 15.45-acre net developable upper portion of the site is underlain by low permeable soil formations of Yolo and Clear Lake clays. These soil types are poorly drained, have high runoff rates and slow permeability and as such, stormwater does not rapidly drain off the site or

[16] Department of the Army San Francisco District, U.S. Army Corps of Engineers Regulatory Division, Subject: File Number 2004-255710, letter to Mr. Doug Spicher, Wetland Research Associates, dated January 30, 2019

infiltrate into the ground quickly, but tends to spread and pond on the surface until the ground is saturated, then stormwater gradually drains towards the River. Although these soil types become saturated and may pond during heavy rainfall events, they are not jurisdictional wetlands, nor do they accommodate groundwater recharge because infiltration rates are low.

Unless avoidance of certain seasonal wetlands can be achieved pursuant to final site plan review during SPAR (for example, potential avoidance of the small seasonal wetland identified as a future detention basin site within the River Corridor), the Revised Project proposes to fill 0.33 acres of isolated seasonal wetlands near the SMART rail corridor, and fill of the 0.01-acre seasonal wetland near the River to accommodate the river terrace (0.34 acres total). Some of these depressions contain typical wetland-associated vegetation, but they are dominated by non-native grasses and herbs, with native species typically not represented as dominant species. The functions and values of these seasonal wetlands rate as low to moderate. They are dry most of the year and subject to discing as part of non-native grassland fire control, which further reduces their value to both aquatic and terrestrial wildlife species. The larger 0.28-acre seasonal wetland located along the upper bank of the Petaluma River near the Oak Creek Apartments will be preserved under both the original Project and the Revised Project.

Like the original Project, the Revised Project includes a Habitat Mitigation and Monitoring Plan (HMMP) that provides for the creation of new perennial and seasonal wetland habitat as mitigation for impacts to wetlands. These newly created wetlands will augment habitat value and increase habitat complexity along the River. Terraced grading along the River edge is proposed to include new seasonal wetlands with appropriate wetland hydrology and native wetland plant establishment. The original Project had proposed to create a total of 0.54 acres of new seasonal wetland habitat. As a result of grading design changes made to preserve additional oak trees along the River, the Revised Project will result in creation of approximately 0.47 acres of seasonal wetland habitat, or approximately 0.07 acres less new wetlands. Pursuant to Draft EIR Mitigation Measure Bio-4, these new wetlands will still meet the requirement to replace and/or exceed the functions and values of the approximately 0.34 acres of seasonal wetlands filled for new development and terracing, sufficient to achieve a no-net-loss standard. The applicant will also be required to obtain all required authorizations from the US Army Corps and Regional Water Quality Control Board (RWQCB) as applicable for the loss or disturbance of on-site seasonal wetlands, and will be subject to any additional requirements of these permitting agencies. The loss and replacement of these seasonal wetlands is not expected to have any quantifiable effect on flooding at or downstream of the site. With implementation of the identified mitigation measures, the City will ensure that wetland mitigation fully compensates for the loss of wetland acreage and wetland habitat values resulting from the Project, such that there is no net loss of wetland acreage and values. Subsequent permit requirements may result in different (potentially greater) mitigation obligations, particularly regarding compensatory mitigation ratios, which shall be based on site-specific information and determined through coordination with the Corps and RWQCB.

Riparian Habitat

Riparian woodland vegetation occurs along the Petaluma River and extends approximately 50 to 100 feet from the bank, covering approximately 1.92 acres of the site (see prior Figure 2-6). The vegetation consists primarily of thickets of willow, blackberry and teasel in almost impenetrable swaths along the riverbank. The functions and values of these riparian scrub habitats along the River range from low to high. The flood attenuation potential of these habitats and their respective topography is low. The dense vegetation along the river does rate high for riverbank protection and preventing erosion, and serves to improve water quality by reducing toxics and excess nutrients in the water. As habitat value, the patches of non-native Himalayan blackberry rate lower because they are generally homogeneous stands and nearly impenetrable to most species of wildlife. The willows and other native vegetation have a high rating for wildlife habitat value. The dense vegetation also contributes a high amount of primary production with gradual decomposition that provides a steady food chain source. The riparian habitat is fully contained within the River bank and below the top of slope.

Development of the site (including apartment buildings, roadways, parking areas, etc.) is set back from the riverbank slope and would not directly affect riparian habitat. However, consistent with Petaluma General Plan policies to improve flood capacity and flow efficiency, both the original Project and now the Revised Project include a terraced grading plan along the riverbanks fronting the site, designed to accommodate a 100-year storm event within a modified River channel. The terraced grading plan will result in the removal of more than 20,000 cubic yards of soil from along the riverbanks. The Revised Project's terraced grading plans have been slightly modified to enable greater preservation of trees, but the re-contouring of the riverbank will remove approximately 1.62 acres of riparian habitat. Most of the riparian habitat to be removed consists of lower quality non-native Himalayan blackberry vegetation. Approximately 0.30 acres of higher quality native riparian vegetation along the River as determined by the presence of native willow thicket will be protected and retained as part of the terracing plan (see prior Figure 2-6).

Like the original Project, the Revised Project's Habitat Mitigation and Monitoring Plan (HMMP) provides for preservation of the highest value existing riparian habitat along the river, removal of invasive monocultures of Himalayan blackberry patches, and creation and restoration of riparian habitat to maintain beneficial functions and values. Following grading activities, the HMMP proposes that approximately 2.08 acres of graded slopes will be replanted with riparian trees and shrubs, and an additional area of 0.71 acres along the River will be planted with marsh/wetland plants, for a total of 2.79 acres of replanted riparian habitat. With the 0.30 acres of existing high-quality riparian habitat retained, the total on-site riparian habitat will be 3.09 acre (or a proposed replacement ratio of 1.7:1). Willows that currently exist within the riparian zone will be sourced for species harvesting to revegetate the newly established riparian areas. To augment those existing trees that will be preserved, mitigation for the removal of other vegetation will include installing new trees and shrubs in positions in the ecotone between the developed uplands and the riparian and wetlands mitigation habitat areas, creating a transition zone between the two habitat types.

The applicant will be required to obtain all required authorizations from the California Department of Fish and Wildlife (CDFW) as applicable for the loss or disturbance of riparian vegetation. Pursuant to Mitigation Measure Bio-5A, the final grading plans for terraced grading shall show Riparian (Willow) Preservation Zones of a minimum of 0.30 acres where the preservation of existing high-quality riparian vegetation shall be achieved, with special measures to protect the riparian zone during construction. Mitigation Measure Bio-5C requires the final HMMP to include a landscape and biological restoration plan designed and constructed to contribute to wildlife and fishery habitat values and water quality.

The loss and replacement of these riparian areas is not expected to have any quantifiable effect on flooding at or downstream of the site. With implementation of the identified mitigation measures, the City will ensure that riparian habitat mitigation fully compensates for the loss of riparian acreage and habitat values resulting from the Project. Subsequent permit requirements may result in different (potentially greater) mitigation obligations, particularly regarding compensatory mitigation ratios, to be based on site-specific information and determined through coordination with the CDFW.

Master Response to Comments Regarding Noise

Numerous comments have questioned whether the effects of ambient noise and vibration on the Project (under existing or projected future conditions) are applicable CEQA impact concerns. Comments have also questioned whether the projected future train-related noise and vibration levels as presented in the Draft EIR provide a reasonable basis for assessment of the Project, and whether the Project's increased traffic will result in significant traffic-related noise on Graylawn and/or Jess Avenue. The following Master Responses address each of these issues.

Effects of the Environment (Ambient Noise) on the Project

It had been the City of Petaluma's standard practice (consistent with CEQA Guidelines, Appendix G) to consider a project's impact as significant if a project would expose its residents to noise levels in excess of standards established in the City General Plan or Noise Ordinance, or if a project would expose its residents to excessive groundborne vibration. However, the California Supreme Court holding in *California Building Industry Association v. Bay Area Air Quality Management District* (2015, 62 Cal. 4th 369) and the corresponding October 2018 revisions to CEQA Guidelines Appendix G (which were published after the December 2017 release of the Draft EIR) have clarified that the effects of the environment on a project are not to be considered a significant impact under CEQA. Therefore, the exposure of new project residents to excessive ambient noise or groundborne vibration is no longer considered a significant impact threshold in this EIR.

This understanding of CEQA does not preclude the City of Petaluma from implementing noise or vibration standards established in the General Plan, Noise Ordinance or other applicable standards of other agencies as conditions of project approvals, pursuant to its discretionary actions on the Project. Therefore, discussion of the Project's relationship to noise and vibrations standards is not removed from the Draft EIR, but is instead re-cast as relevant informational analysis related to General Plan consistency and regulatory guidance. Mitigation measures are re-defined as recommended conditions of approval pursuant to these applicable General Plan and regulatory standards and guidelines (see Chapter 7: Revisions to the Draft EIR).

Applicability of Projected Future Train Noise and Vibration Levels

North Coast Rail - Cumulative Assumptions

The Draft EIR's assessment of the original Project's compatibility with ambient noise levels was based on a reasonably foreseeable projection of future train activity on the adjacent SMART rail line as derived from the *Environmental Noise Assessment for the North Coast Railroad Authority (NCRA) Russian River Freight Rail Project*. [17] That Environmental Noise Assessment projected that freight train traffic along the segment of rail adjacent to the project site would increase to 6 trains per day, and that Sonoma-Marin Area Rail Transit (SMART) commuter/passenger train operations would increase to 24 trains (or 48 diesel multiple unit trains) per day. Because the environmental reviews for these expanded rail services were complete and both projects had been approved by their respective Authorities, the Draft EIR identified this level of rail traffic as a reasonable and foreseeable future condition along the segment of rail line adjacent to the site. Pursuant to information contained in the NCRA EIR:

- Projected future noise along the rail line adjacent to the site was estimated to generate noise levels of 70 dB Community Noise Equivalent Level (CNEL) at 25 feet from the tracks, 65 dB CNEL at 54 feet from the tracks and 60 dB CNEL at 117 feet from the tracks.
- This level of train activity was also projected to result in maximum train-related decibel vibration velocity levels of approximately 74 to 78 VdB at 50 feet from the tracks, with a conservative 72 VdB vibration velocity threshold for a residential receiver occurring at approximately 100 feet from the tracks.

Based on these cumulative noise and vibration assumptions from the NCRA EIR, the Draft EIR recommended a residential structure setback of 54 feet, at the projected future "conditionally acceptable" 65-dBA CNEL contour (Mitigation Measure Noise-1A). The Draft EIR also recommended either an additional 100-foot setback or incorporation of structural measures into the design and construction of residential buildings

[17] North Coast Railroad Authority (NCRA) *Freight Rail Project EIR*, prepared by Kleinfelder Associates (November 5, 2009) and Bollard Acoustical Consultants, Inc., Appendix H to the NCRA Rail Project EIR, *Environmental Noise Assessment NCRA RRD Freight Rail Project* (May 2008)

located closer than 100 feet from the tracks to address train-related ground vibration (Mitigation Measure Noise-2).

Current (May 2019) Noise Measurements

A follow-up noise and vibration monitoring survey was completed in May 2019 to quantify the current ambient noise and vibration levels produced by current rail operations (see **Appendix B** of this document). The 2019 noise monitoring survey included long-term measurements adjacent to the SMART corridor along the westerly boundary of the site, conducted from Wednesday, April 24 to Wednesday, May 1, 2019. The sound monitor was placed approximately 23 feet east of the centerline of the near set of tracks. During the noise monitoring survey, SMART train pass-bys occurred approximately 34 times per day during weekdays and approximately 10 times per day during weekends, passing the site at speeds ranging from 21 to 26 mph. Heavy freight train pass-bys occurred on an infrequent basis, with only one train on Thursday night (April 25) and two trains on Monday night (April 29). The freight train pass-bys were not observed, but the speed of freight train pass-bys is presumed to be relatively slow.

The current (May 2019) noise level measurements concluded the following:

- Maximum instantaneous noise levels produced by SMART train pass-bys typically ranged from 80 to 90 dBA Lmax, and the freight train pass-bys generated maximum instantaneous noise levels of 90 to 100 dBA Lmax at 23 feet east of the centerline of the near set of tracks.
- The nighttime train events (both SMART and freight) contributed to higher average daily noise levels. The Community Noise Equivalent Level as measured at the noise monitor (located 23 feet east of the centerline of the near set of tracks) ranged from 62 to 67 dBA CNEL on weekdays, and from 58 to 63 dBA CNEL on weekends
- Based on the worst-case CNEL noise levels as measured during the survey, the 65-dBA CNEL noise contour was estimated to occur at approximately 30 feet from the center of the near set of railroad tracks.

These current noise measurements recorded train noise levels that are substantially lower than the projected future cumulative rail noise as estimated in the NCRA EIR.

Current (May 2019) Vibration Measurements

Vibration levels due to SMART trains were measured at the site in May 2019, with the vibration monitor placed at approximately 54-feet from the center rail. Vibration data was obtained during five SMART train pass-bys, but no heavy freight train pass-bys occurred during the monitoring period. Vibration levels measured on the site are representative of vibration levels at ground level (i.e. vibration levels that would enter the building foundation). The vibration measurements at the site concluded the following:

- Vibration levels measured at this location indicate that SMART trains produce vibration levels ranging from 58 to 59 VdB at 54 feet from the center of the rail tracks. These measured vibration levels are well below the conservative 72 VdB threshold as used in the Draft EIR. The low level of vibrations is likely a function of the relatively slow speed of train pass-by, modern track conditions and vibration isolation equipment that is included in the design of SMART.
- Although the May 2019 vibration monitoring did not capture vibration levels associated with current freight trains, the NCRA EIR's cited "reference" freight train vibration level of approximately 74 to 78 VdB at a distance of 50 feet from the center of the tracks is likely representative of current, individual freight train vibration effects.

Implications Based on Current (Existing) Conditions

Train Noise

Based on current train traffic conditions (both SMART and freight rail), the calculated setback necessary to achieve the 65-dBa CNEL "conditionally acceptable" noise levels for multi-family residential use is at 30 feet from the center of the rails, rather than at 54 feet as calculated under the future cumulative scenario of the NCRA EIR. A setback of approximately 30 feet from the rail centerline would satisfy land use compatibility standards of the Petaluma General Plan for "conditionally acceptable" noise levels (i.e., 65 dBA CNEL) at multi-family residential uses, based on current train noise.

The calculated setback necessary to achieve the 60 dBA CNEL "normally acceptable" noise level for outdoor uses in residential areas under current train noise conditions (both SMART and freight rail) is at approximately 60 feet from the center of the rails, rather than at 117 feet as calculated under the future cumulative scenario of the NCRA EIR.

The Revised Project's 54-foot setback from the rail centerline would be more than adequate to meet "conditionally acceptable" noise levels (i.e., 65 dBA CNEL) for multi-family residential uses, and the Revised Project would not place any primary active outdoor use areas (i.e., the swimming pool and courtyard or active play areas) in areas subject to current noise levels that would exceed "normally acceptable" noise (i.e., greater than 60 dBA CNEL).

The regulatory requirement for indoor space in residential units is an exposure level of 45 dBA Ldn, as established in the California Noise Insulation Standards found in CCR Title 24. The Revised Project's conceptual site plan indicates that typical balcony and window treatments for units facing the rail tracks will comply with recommendations of the Draft EIR, which call for specific noise control treatments capable of achieving interior noise levels of 45 dBA or lower (i.e., sound rated windows and doors, sound-rated wall construction, acoustical caulking, protected ventilation openings, stucco siding, thicker walls, bedroom orientation, etc.). Throughout the remainder of the site, future noise levels from freeway traffic noise and rail noise are expected to be between 60 and 65 dBA Ldn and within "normal" to "conditionally acceptable" noise levels. Standard residential building construction methods are generally capable of achieving a 15 to 20 dB reduction from outdoor noise, thus able to achieve the 45 dB interior noise requirement and reducing anticipated noise conditions inside buildings.

SMART Train Vibrations

The May 2019 vibration measurements of SMART trains found that these trains produce vibration levels ranging from 58 to 59 VdB at 54 feet from the center of the rail tracks. These vibration levels at 54 feet are well below the FTA threshold of 72 VdB for "frequent" train events. The measured vibration levels are relatively low due to the slow speed of train pass-bys, modern track conditions and vibration isolation included in the design of SMART trains. The Revised Project's 54-foot residential set back from the centerline of the rails more than adequately meets FTA criteria for "frequent" SMART train events that now occur. For reference, the 72 VdB threshold for SMART trains (only) occurs at approximately 15 to 20 feet from the rail centerline.

Freight Train Vibrations

As noted in the Draft EIR (Table 13-6), the FTA has three ground-borne vibration impact criteria, generally based on the frequency of vibration event occurrences and/or the duration of individual freight train events. A criteria of 80 VdB applies to locations subject to "infrequent events" (conditions of less than 30 vibration events of the same source per day). A criteria of 75 VdB applies to locations subject to "occasional events" (conditions where between 30 and 70 vibration events of the same source occur per day), and a criteria of 72 VdB applies to locations subject to "frequent events" (conditions of more than 70 vibration events of the same source per day). In addition to these frequency criteria, the NCRA EIR conservatively applied the

"frequent event" threshold of 72 VdB, irrespective of train frequency, due to the anticipated extended duration of individual future freight train events. The NCRA EIR assumed that freight train traffic would ultimately include 60-car trains from Willits to Lombard.

Although the number of cars that travelled past the project site during the noise and vibration monitoring period were not counted, the noise measurements do not suggest that these individual freight train events occurred over an extended duration, but rather were relatively short duration events consisting of a limited number of cars (i.e., not as many as 60 cars per train). Current freight trains are generally smaller in car length, mostly carrying grains bound for feed businesses or to the Lagunitas Brewing Co. in Petaluma.

Based on NCRA EIRs "reference" vibration levels for freight trains (ranging from 74 to 78 VdB at 50 feet from the center of the rail tracks), and without the 'extended duration penalty' for individually long freight trains, the frequency thresholds that would be currently applicable to the site would include the following:

- The 72 VdB threshold that applies to locations subject to "frequent events" (conditions of more than 70 vibration events of the same source per day) occurs at approximately 40 feet from the rail centerline
- The 75 VdB threshold that applies to locations subject to "occasional events" (conditions where between 30 and 70 vibration events of the same source occur per day) occurs between 50 and 65 feet from the rail centerline
- The 80 VdB threshold that applies to locations subject to "infrequent events" (conditions of less than 30 vibration events of the same source per day) occurs at approximately 100 feet from the rail centerline

The Revised Project's 54-foot residential set back from the centerline of the rails more than adequately meets the criteria for the "infrequent" number of freight train events that now occur, and is approximate to the location of where the "occasional" freight train event criteria occurs, potentially accounting for a less substantial 'extended duration penalty'. The Revised Project's 54-foot setback does not meet the frequent event setback criteria, but current train traffic is neither frequent (i.e., is not more than 70 events per day) nor are current freight trains of a particularly extended duration (i.e., not as many as 60 cars each).

Implications Based on Potential Future (Cumulative) Conditions

The potential future conditions as forecast in the NCRA EIR assume that freight train traffic along the segment of rail adjacent to the project site would increase to 6 trains per day and with individual freight trains of up to 60 car lengths each, and that SMART commuter/passenger train operations would operate up to 24 trains (or 48 diesel multiple unit trains) per day. Although SMART trains have already exceeded these forecast frequencies, freight rail has not. This EIR makes no assumptions as to whether freight rail operations will or will not ultimately achieve the train frequencies or other operational characteristics as presented in the NCRA EIR.

Train Noise

Based on the projected future train traffic conditions (both SMART and freight rail), the calculated setback necessary to achieve the 65-dBa CNEL "conditionally acceptable" noise levels for multi-family residential use at the Project site would be at 54 feet from the center of the rails, as indicated in the Draft EIR. The calculated setback necessary to achieve the 60-dBa CNEL "normally acceptable" noise level for outdoor uses in residential areas under projected future train traffic conditions (both SMART and freight rail) is at approximately 109 feet from the center of the rails, as also indicated in the Draft EIR. The Revised Project's 54-foot setback from the rail centerline would to meet the potential future "conditionally acceptable" noise level of 65 dBA CNEL at all multi-family residential uses, and the Revised Project does not place any primary active outdoor use areas (i.e., the swimming pool and courtyard or active play areas) as close as 109 feet from the tracks.

SMART Train Vibrations

Based on the May 2019 measurements, SMART trains produce vibration levels ranging from 58 to 59 VdB at 54 feet from the center of the rail tracks. The Revised Project's 54-foot residential set back from the centerline of the rails more than adequately meets FTA criteria for future "frequent" SMART train events.

Freight Rail Vibrations

If future freight rail use were to increase to levels as forecast in the NCRA EIR (i.e., up to 6 freight trains per day, with 60-car trains from Willits to Lombard), the Revised Project's 54-foot setback from the rail centerline would not meet the "frequent event" threshold, inclusive of the 'extended duration penalty' for long duration vibration events. The Revised Project's 54-foot setback would approximate the "occasional event" threshold and would include a less substantial (but still conservative) 'extended duration penalty' for long duration vibration events. As part of its discretionary considerations of project approvals, the City may consider application of the Draft EIR's recommendation to incorporate structural design measures into the design and construction of any residential buildings located closer than 100 feet from the tracks to reduce future residents' annoyance from anticipated vibration levels. As indicated in the introductory paragraphs to this topic, effects of the environment on the Project are not considered a significant impact under CEQA, and the exposure of new residents to ambient noise or groundborne vibration is not considered a significant impact threshold in this EIR. This does not preclude the City of Petaluma from implementing noise or vibration standards established in the General Plan, Noise Ordinance or other applicable standards of other agencies as conditions of project approvals.

Traffic Noise at Graylawn Avenue

As more fully described under the Master Response to comments regarding Traffic on Graylawn and Jess Avenue (above), all traffic generated by the Revised Project would have only one means of ingress and egress via Graylawn Avenue, with a portion of those trips (estimated at approximately 14%) also using the Graylawn-to Jess alternative route to Payran. Under this scenario, the expected ADT on Graylawn would increase from approximately 1,142 ADT to approximately 2,510 ADT. The expected ADT on Jess would increase from approximately 419 ADT to approximately 642 ADT. With this level of additional traffic, residences along Graylawn Avenue would experience increased traffic noise. Further analysis has been conducted to determine whether this additional traffic noise would be a significant impact based on the threshold used in this EIR, which defines significant as a permanent increase in ambient noise levels of 4-dBA CNEL or more, if the resulting noise level would exceed that described as normally acceptable for the affected land use.

Recent (May 2019) measurements of traffic noise have been conducted at a location approximately 105 feet from the centerline of Graylawn Avenue along Cordelia Drive to quantify existing ambient traffic noise in the neighborhood (see **Appendix B**). Based on these recent measurements, the current ambient noise level at this location ranges from 59 to 61 dBA CNEL on weekdays, and from 56 to 58 dBA CNEL on weekends. Existing traffic noise on Graylawn is already at, and in certain cases slightly exceeds the "normally acceptable" noise level of 60 dBA CNEL at residences along Graylawn. The increased traffic on Graylawn attributable to the Revised Project has been calculated as corresponding to an increase in noise levels of approximately 3.4 dBA CNEL, and the increased traffic attributable to the Revised Project on Jess Avenue would equate to a corresponding increase in noise levels of approximately 1.9 dBA CNEL (Illingworth & Rodkin, May 2019). Although the Revised Project's traffic noise on Graylawn would increase traffic noise such that ambient noise levels would exceed the "normally acceptable" noise level of 60 dBA CNEL, neither Graylawn nor Jess would experience an increase in traffic noise that exceeds the threshold level of 4 dBA CNEL or more, and the impact would be less than significant. The applicant has voluntarily agreed to implement a Traffic Calming Plan as part of the Revised Project to address increased traffic on Graylawn and Jess Avenues (see Appendix A). The strategies presented within the Traffic Calming Plan are intended to be conceptual in nature and are

not intended for immediate implementation without a community engagement process followed by detailed engineering design. The applicant shall coordinate with City Public Works staff on the preferred Traffic Calming approach and design (anticipated to be similar in nature to Concept 3 as shown in the conceptual Traffic Calming Plan of Appendix A), and the preferred Traffic Calming Plan shall be shown on the plan set for SPAR review. As part of the SPAR process, the Planning Commission will review and consider approval of a final Traffic Calming Plan, specifically determining which traffic calming measures will ultimately be implemented. The Public Improvement Plan set for the Revised Project shall include the final Traffic Calming Plan. One of the objectives of the Traffic Calming Plan is to reduce vehicle speeds on these roadways, which will also further reduce associated traffic noise.